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THE COLD CANVASS

By B. T. Umor

Beta Tau Upsilon, Of Thee We Sing

Somewhat through the snow and ice a rumor has managed to penetrate the line from Chicago to Detroit that a new fraternity is in the process of formation. Its membership is recruited from among students of air conditioning, and its Greek-letter designation is Beta Tau Upsilon.

Old B.T.U. is mighty proud to contribute his initials to the organization, and humbly suggests that his rumbling bass cuts a solid foundation under a quartet rendition or a ritual reading.

Trousers

Refrigeration Service out in Los Angeles relays this—

Jimmy, who had been climbing trees, came in for the second time with his trousers torn.

"Go upstairs and mend them yourself," ordered his harassed mother.

Some time later she went upstairs to see how he was getting on. The trousers were there but no Jimmy.

Puzzled, she came downstairs and noticed that the cellar door, usually shut, was open. She went to the door and called loudly and angrily, "Are you running around down there without your trousers on?"

The reply came sternly in a man's voice, "No, madam, I'm reading the electric meter."

C.O.D.

Every sales manager has his black moments with salesmen who insist on using approach methods which are clever but not exactly ethical.

A. M. Sweeney, who is at the sales helm for General Electric refrigerators, tells of the time he went on
(Concluded on Page 2, Column 1)

Philco Distributors To Meet In Florida

INDIANAPOLIS—Philco distributors will get their first look at the new line of Conservador electric refrigerators at a national sales convention to be held in Palm Beach, Fla., Feb. 16 through 19.

The new refrigerators, manufactured by Philco Refrigerator Co. under manufacturing rights and patents obtained from Fairbanks, Morse & Co., will be sold and guaranteed by Philco Radio & Television Corp.

19-Year Record of Air Conditioning

WASHINGTON, D. C.—Figures showing the total annual installed cost of air-conditioning equipment in the United States from 1919 to 1937 inclusive, have been compiled by the Air Conditioning Manufacturers Association, which includes all of the leading manufacturers of systems for all-year-around service, and particularly those which provide cooling and dehumidification by refrigeration. The figures do not include the sales of forced-draft hot air furnaces, or humidifying devices, which are widely advertised under the name of "air conditioning."

The Air Conditioning Manufacturers Association has been compiling official sales statistics of member companies only since 1934 and the figures for the previous years are, therefore, based upon data obtained from other sources. However, the
(Concluded on Page 24, Column 3)

N. Y. Fair Will Be Thoroughly Air Conditioned

Installations Boomed By Requirements On Ventilation

NEW YORK CITY—There'll be 185 days of June weather in so many of the important buildings of the 1939 New York World's Fair that the absence of summer air conditioning will almost prove to be an exception.

All-year air conditioning—a problem which the exhibitor does not face—is provided by the Fair corporation in its Administration building, its Press and Postoffice building, and in the Terrace Club. Summer air conditioning also will be provided by the Fair corporation in the Perisphere and the Theater and Concert Hall, with adequate provisions for ventilation in the general exhibit buildings.

The list of buildings being erected
(Concluded on Page 24, Column 4)

Hatch & Flannery Buy Control of Bush Co.

HARTFORD, Conn.—James W. Hatch has become president as well as treasurer of the Bush Mfg. Co., and E. M. Flannery is secretary. Mr. Hatch and Mr. Flannery have purchased controlling interest in the company.

Charles T. Bappler, formerly sales manager, is no longer connected with the firm.

Glenn Muffly's Ideas on Ultra Modern Household Refrigerator Design Revealed In Series of 5 Patents Just Granted

Floating Ice Wafers, High Humidity For Food, Hourly Defrosting and No Drip Pan Are Among The Features

NOW that the replacement market is approaching center stage, there is increasing interest in the possibility of new features for household refrigerators which stimulate the desire to trade in the old unit for a new one.

Manufacturers are not much inclined to talk about the ideas being developed in their laboratories for two good reasons: First, they do not care to expose their plans to competitors, and second, they like to acclaim the current model as the last word—the ultimate in perfection. Anyway, you can't sell next year's model now, and even the laboratory engineers aren't sure what next year's model is going to be.

Ordinarily the predictions of inventors (that they have something which will put all previous models in the ash can) aren't any too much help in predicting "the refrigerator of the future." All too often it happens that the "amazing new invention" has one slight flaw—it won't work.

However, in the case of Glenn Muffly, highly respected member of the A.S.R.E., pioneer in the automotive, aviation, and refrigeration fields, holder of endless patents and experienced in practical production problems, it may be that he "has something" in the series of five patents issued a week or so ago.

We're not saying, and you're welcome to your own opinion in the matter, but we know that a lot of readers of the NEWS are inventors (amateur or professional) and that many others like to speculate (men-

A. B. Schellenberg Elected President Of Alco Valve

ST. LOUIS—A. B. Schellenberg, formerly vice president of Alco Valve Co., was elected president and general manager of the company at a meeting of the board of directors, Jan. 30. He succeeds J. L. Shrode, founder and former head of Alco, who died Dec. 31.

Mr. Schellenberg has been sales manager of the company for the past two years.

After receiving his degree in chemical engineering from Washington University (St. Louis), he worked for a time in the service department of the local Kelvinator distributor. He joined Alco in 1929, four years
(Concluded on Page 15, Column 2)

G-E Officials Carrying Air-Conditioning Story Into Field This Year

BLOOMFIELD, N. J.—Because General Electric believes the air-conditioning industry's greatest need in 1939 is more merchants to sell its product, General Electric's entire selling organization for these lines will move at once into the field for a six weeks' coast-to-coast tour of duty touching all main distribution points.

"We have temporarily abandoned our usual custom of holding a single distributor's meeting in New York for the purpose of showing products and disclosing sales plans," states J. J. Donovan, manager of the G-E air-conditioning department.

"This year will be a vital one for the business, with greater emphasis
(Concluded on Page 24, Column 2)

New 'Cold Wall' Principle Used In Six Top-Price Frigidaire Models

Kelvinator Gets Help From Star Salesmen On Training Course

DETROIT—Eighteen retail salesmen, who have done outstanding work in selling Kelvinator household appliances, have "sat in" at factory conferences here as members of the advisory council of the Kelvinator National Salesmen's Institute.

Members of the council were meeting with officials of the Institute and executives of Kelvinator for the purpose of hearing an outline of the course of study and the proposed method of administering it.

Meeting with the group were Sidney Edlund, New York City, president of the Institute; C. William Rados, the Institute's manager; Henry W. Burritt, vice president of Kelvinator; and Miles H. Dittmer, Thomas L. Craig, and Ronald A. Demmer, Institute field representatives.

Advisory council members, selected for their outstanding achievements in selling, and the distributor or dealer organizations they represent are:

Harry Meier, Fred Salway Co., Batavia, N. Y.; Anson W. Sears, Pouchier, Wood & Wallin, Inc., Poughkeepsie, N. Y.; Perry W. Briley, J. G. De Prez Co., Shelbyville, Ind.; Walter L. Gates, Kelvinator branch, Detroit; Morris Warnick, Federal Furniture Store, New Orleans; Jerry W. Dollins, 555, Inc., Little Rock, Ark.; C. J. Crutchfield, Durham Public Service Co., Durham, N. C.; Clarence E. Peglow, Northern States Power Co., Minneapolis; George H. Kraft, Northern States Power Co., Minneapolis.
(Concluded on Page 10, Column 4)

Pittsburgh Dealers Ask Finance Plan Revision

PITTSBURGH—If the opinions of 75% of the distributors and 77% of the dealers are followed, there'll be a "new deal" in financing plans for electrical appliances in the Pittsburgh area this year. In a recent survey conducted by the Pittsburgh Electric League, this percentage said they thought a revision of the present financing arrangement desirable.

In answering the survey, all dealers and distributors said they thought that present financing charges were inequitable.

Distributors and dealers split wide apart in their views on the desirability of recourse and non-recourse arrangements. Of the dealers, 85.7% thought that a non-recourse plan was worth 25% more than a recourse plan; but 66% of the distributors thought otherwise.

Repossession average 6.8%, the survey brought out, and about as many distributors re-sell at a profit as sell at a loss. With dealers, about
(Concluded on Page 6, Column 5)

Suspend Grunow Stock On Chicago Exchange

CHICAGO—Suspension of trading of the common stock of General Household Utilities Co., manufacturer of Grunow refrigerators and radios, has been ordered by the executive committee of the Chicago Stock Exchange.

After careful consideration of the financial condition of the company as revealed in the annual report of July 31, 1938, released some days ago, and after discussion with company officials of their tentative plans for rehabilitation, the exchange com-
(Concluded on Page 15, Column 2)

Lower Part of Cabinet Cooled Through Walls; 'Price' Unit Added

DAYTON, Ohio—The "radiant" principle of heat transfer makes its entry into the field of household electric refrigeration in the "Cold Wall," stand-out feature of the six top models in Frigidaire's 15-unit line for 1939.

By means of a solid glass partition, called the "dew fresh seal," the cabinets of "Cold Wall" models are divided into two compartments. In the upper compartment, the conventional evaporator freezes ice and makes cold, as usual.

The lower compartment, however, is refrigerated directly through the walls by concealed refrigerating coils. This arrangement is claimed to result in uniform low temperatures, regardless of kitchen or outside temperatures; higher humidities in both compartments; and no drying out of foods, because heat is removed by radiation and metal-to-metal contact rather than by air circulation.

With the "Cold Wall" units designed for the upper-income brackets, Frigidaire has aimed at the lower-income group a new "Super Value" 6-cu. ft. refrigerator of conventional design to retail at a price under \$150, a new low (with Frigidaire) for a unit of this size.

S. M. Schweller, Frigidaire's chief engineer, under whose supervision the "Cold Wall" unit was developed, describes the new-type refrigerator as follows:

"Fundamentally, the new 'Cold Wall' Frigidaire incorporates two basic methods of applying the results of mechanically produced low temperatures, the cabinet itself being divided into two completely separated compartments by means of a solid glass divider, placed in the center, called the 'dew fresh seal,' and serving as one of the regular shelves.

"Between the top and bottom sections, thus created, there is no connection whatever, nor is there any
(Concluded on Page 6, Column 1)

Ludington To Manage Leonard District

DETROIT—R. R. Ludington, who has been connected with the Leonard organization since 1931, has been appointed a district manager of the company to cover western New York, western Pennsylvania, northern and eastern Ohio, and eastern Michigan.

Part of this territory formerly was handled by Ren Roe, who has been named to head the eastern district for Leonard, comprising the New England states, eastern New York, New Jersey, eastern Pennsylvania, Maryland, and Washington, D. C.

Norman MacDonald, who formerly handled part of this eastern territory, has resigned.

Bappler Heads Sales For Refrigeration Appliances

CHICAGO—Charles T. Bappler, recently resigned as sales manager of Bush Mfg. Co., is taking charge of sales in all territories for Refrigeration Appliances, Inc., manufacturer of fin coils and forced-draft cooling units here.

In other personnel changes announced by H. J. Krackowizer, president, Fred Erbach has been named chief engineer and factory manager, Harry W. Bargeman has been placed in charge of sales at the home office, Joseph L. Durkin becomes controller, and William Harvey has been named sales representative with headquarters in Detroit.
(Concluded on Page 2, Column 2)

THE COLD CANVASS

By B. T. Umor

(Concluded from Page 1, Column 1)
a missionary tour with one of these hurry-up-look-what-I-got boys to watch his style.

This chap stopped at an apartment house, called the housewife-prospect on the speaking tube, and gave a hog caller's yell into the transmitter, "C. O. D."

The woman broke all records racing down stairs and when she found out that it was only the salesman's entry gag she was plenty burned up and told him off in no uncertain terms—before slamming the door.

The amazed Mr. Sweeney also took him to task for the frozen ruse that backfired and asked the salesman to explain and quick.

"Why," he came back, "what's the matter with hollering C. O. D.? I simply meant 'Come on down.'"

How Cities Sleep

According to findings announced at the World Power Conference, electricity consumption figures show that Californians set the record for early rising, practically the whole state turning out at 6 a.m. People in Detroit stay up later and get up earlier than any others except Californians, and current loads show that the populace of Washington, D. C. goes to the movies in a body between 6 and 10 p.m., while people in Rochester, N. Y. like to linger over their breakfast.

"Superior by name Superior in Quality"

SUPERIOR VALVE & FITTINGS CO.
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Manufacturing a complete line of DIAPHRAGM PACKLESS VALVES, MANIFOLDS, ACCESSORIES and FITTINGS for the Refrigeration and Air Conditioning Industry.

Refrigeration Appliances Names New Sales and Engineering Personnel

(Concluded from Page 1, Column 1)
S. V. Swanson, formerly chief engineer of the company, has been advanced to a new post, that of research engineer.

Well known in the refrigeration industry through his several years' association with Bush in the fin coil field, Mr. Bappler will be in charge of Refrigeration Appliances' sales in all territories.

Mr. Bargeman, who has been in charge of sales engineering for the company, adds to his duties in that position the management of sales at the home office here. A graduate of Lewis Institute, and of Rutgers University in air conditioning, he has been with Refrigeration Appliances for three years, coming to the company from the Airtemp distributorship in Chicago.

Mr. Erbach, just named chief engineer and factory manager, has had a wide background of experience in the refrigeration industry. He was with the Lipman organization from 1923 to 1926, after which he left to become assistant chief engineer of Kelvinator from 1926 to 1931. Returning to Lipman, he was for the next two years engineer and general manager of the organization's Chicago office.

During the past year, Mr. Erbach was associated with Allis-Chalmers Co. in a special engineering capacity.

Among his engineering accomplishments was said to be the patenting of the first fin coils, while with Kelvinator. Later, when he was with Lipman, he developed the first air-cooled large "Freon" compressors, adapted by the Pullman Co., and the first successful air-cooled units for railway cars.

Mr. Durkin, with Refrigeration Appliances for the past two years in charge of accounting, has been advanced to the position of auditor. Previous to his association with the company, he was employed as an accountant with Wilson & Co., Market Provision Co., and Supreme Packing Co., all of Chicago.

Mr. Harvey, named sales representative with headquarters in Detroit, will cover Michigan, eastern Indiana, Ohio, and western Pennsylvania for the company. He has been with Refrigeration Appliances for a year,

Revised 6-Year Cumulative Record of Electric Refrigerator World Sales, Exports, Retirements and Market Saturation

Estimated by Air Conditioning & Refrigeration News on the basis of final totals for 1938 furnished by manufacturers in the Nema group (see tabulation below).

	World Sales	Exports	Sales In U.S.	Retirements	Distributor & Dealer Stocks	Total In Use In U.S.	Wired Homes*	Market Saturation
Dec. 31, 1933	5,885,000	356,000	5,529,000	800,000	75,000	4,654,000	19,844,000	23.4%
During 1934	1,390,000	107,000	1,283,000	63,000				
Dec. 31, 1934	7,275,000	463,000	6,812,000	863,000	125,000	5,824,000	20,694,000	28.1%
During 1935	1,688,000	120,000	1,568,000	114,000				
Dec. 31, 1935	8,963,000	583,000	8,380,000	977,000	125,000	7,278,000	21,204,000	34.3%
During 1936	2,180,000	184,000	1,996,000	225,000				
Dec. 31, 1936	11,143,000	767,000	10,376,000	1,202,000	200,000	8,974,000	21,888,000	41.0%
During 1937	2,500,000	190,000	2,310,000	358,000				
Dec. 31, 1937	13,643,000	957,000	12,686,000	1,560,000	300,000	10,826,000	22,800,000	47.5%
During 1938	1,430,000	176,000	1,254,000					
Dec. 31, 1938	15,073,000	1,133,000	13,940,000	1,700,000	125,000	12,115,000	23,420,000	51.7%

*Wired home figures furnished by Electrical Merchandising.

and formerly was associated with Bush Mfg. Co. in Detroit. Previous to his association with Bush, he had considerable experience in dealing with refrigeration distributors and dealers for several years.

In announcing the appointments, Mr. Krackowizer said that he was "unloading" some of his duties so as to be able to devote more time to general supervision of company activities, and especially to round out the organization, internally and externally, as well as to intensify and expand its field contacts.

Mr. Swanson, who up to now has been the company's chief engineer, is taking a vacation trip to Europe, after which he will return to a new position as research engineer. While in Europe, Mr. Swanson plans to cover the countries he visits in the interest of Refrigeration Appliances' products, as well as to investigate European market possibilities generally.

Chicago Summer Mart Will Be June 5-17

CHICAGO—June 5 to 17 has been set as the time for the 1939 Summer Homefurnishings Market to be held in the Merchandise Mart here. The market formerly was held during July of each year.

ALCO Engineered Refrigerant Controls
For Highest Evaporator Efficiency
Alco Valve Co. St. Louis, Mo.

M&E EST. 1866
Compressors
MERCHANDISE & EVANS CO.
Phila., Pa., U.S.A. Plant at Lancaster, Pa.

TIME-TESTED AND FIELD PROVEN
Two-Temperature REFRIGERATORS
Moist Cold Air Circulation plus Tenderizing Freeze Storage
Licensed under Potter Patents.
Get full details and distributor proposition
CONTINENTAL CORPORATION
FOND DU LAC, WISCONSIN
Dist. No. 19

Nema Manufacturers Report Sales of 1,358,956 Household Units To Distributors In 1938

The following 17 companies reported sales to the Refrigeration Division of the National Electrical Manufacturers Association (Nema) on household electric refrigerators for the year of 1938:

Apex Electrical Mfg. Co., Crosley Corp., Edison General Electric Appliance Co., Inc., Fairbanks, Morse & Co., Frigidaire Div. General Motors Corp., General Electric Co., Gibson Electric Refrigerator Co., Johnson Motors Co., Kelvinator Div. Nash-

Kelvinator Corp., Leonard Div. Nash-Kelvinator Corp., Norge Div. Borg-Warner Co., Sparks-Withington Co., Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co.

The sales of the reporting companies include units manufactured for the following concerns: Montgomery Ward & Co., Potter Refrigeration Corp., and Sears, Roebuck & Co.

SALES FOR THE YEAR 1938			
	Domestic	Canadian	Other Foreign
Lacquer (Ext.) Cabinets Complete			
1. Chest	2,048	13	1,582
2. Less than 3 cu. ft.	6	2,747	392
3. 3 to 3.99 cu. ft.	28,323	379	14,996
4. 4 to 4.99 cu. ft.	171,729	13,849	39,975
5. 5 to 5.99 cu. ft.	252,082	11,728	20,624
6. 6 to 6.99 cu. ft.	457,852	6,068	9,943
7. 7 to 7.99 cu. ft.	94,834	1,050	3,894
8. 8 to 9.99 cu. ft.	45,132	369	1,824
9. 10 to 12.99 cu. ft.	769	...	9
10. 13 cu. ft. and up.	24	1	2
11. Total Lacquer	1,052,799	36,204	93,241
Porcelain (Ext.) Cabinets Complete			
12. Up to 4.99 cu. ft.	1,525	54	513
13. 5 to 5.99 cu. ft.	21,803	782	2,024
14. 6 to 6.99 cu. ft.	59,586	232	1,509
15. 7 to 7.99 cu. ft.	20,251	55	769
16. 8 to 9.99 cu. ft.	16,685	54	1,178
17. 10 to 12.99 cu. ft.	2,432	14	306
18. 13 cu. ft. and up.	4,143	38	503
19. Total Porcelain	126,405	1,229	6,802
20. Total—Lines 11 and 19.	1,179,204	37,433	100,043
21. Separate Systems 1/4 hp. or less.	1,092	2,996	13,685
22. Separate Household Evaporators.	11,331	2,726	10,446
23. Total—Lines 20, 21, and 22.	1,191,627	43,155	124,174
24. Condensing Units 1/4 hp. or less.	4,451	1,826	13,287
25. Cabinets—No Systems	372	73	518
Index Value* of Total Dollar Sales.	83.0	221.0	104.0

*Based on weighted sales for 1934, 1935, and 1936.

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The THAWZONE A
The New Liquid Dehydrator and Neutralizer. Moisture trouble cured by simple addition of liquid. Safe, harmless, economical.
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Every facility of Servel's vast factory is available to meet your refrigeration needs, whether large or small.

SERVEL
Write For Details Servel, Inc., Electric Refrigeration and Air Conditioning Division, Evansville, Ind.

EVER HAVE A



Ever get pinched between a slow delivery and a customer who's in a hurry?
Ever had a delay on a refrigerant order hold you up long enough to annoy him?
Next time you're in a rush—call your nearby Virginia jobber—and find what *quick delivery* really means. Extra Dry Esotoo, V-Meth-L, Methylene Chloride or other gas—your Virginia jobber will supply it—and supply it fast!
Call on Virginia for quick service.

EXTRA DRY ESOTOO
V-METH-L
METHYLENE CHLORIDE
VIRGINIA SMELTING Co.
WEST NORFOLK, VIRGINIA

Distributor-Dealer Doings

Appliance Sales Held Up Well In Virginia

ALEXANDRIA, Va.—Dealer sales of electric refrigerators in the territory of Virginia Public Service Co. totaled 6,666 units during 1938, as compared with 7,839 units in the previous year, according to reports made to utility headquarters here.

Total sales of refrigerators, ranges, and water heaters in the territory last year amounted to 8,033 units, as against 9,354 in 1937. Electric range sales were close upon 1937 figures, with 1,015 units last year against 1,099 in the preceding 12 months.

Water heater sales amounted to 352 units last year, as compared to 416 in 1937.

Sales of household refrigerators totaled 208 units during December, with the northern division of the territory alone accounting for 94 of the sales. Electric range sales totaled 101 units during the month, the northern division again leading the sales pace with 60 units.

Electric washer sales in December were 263 units, central division dealerships accounting for 75 sales, western division 57, and northern division 54. Water heater sales of 26 units were reported, northern division bringing in 20 of the sales. Ironer sales totaled 34 units, with the northern division again leading the way with 27 sales.

Eleven sales of commercial refrigeration equipment also were reported during the month, the eastern dealership division bringing in seven of the orders. Dollar volume of December appliance business in the utility's territory was \$114,272, according to dealer reports.

G-E Laundry Dealers Get Display Awards

BRIDGEPORT, Conn.—Ingenuity in making use of identical window display material was rewarded when 13 cash awards, ranging from \$20 to \$200, were presented recently to dealers in all sections of the country by the General Electric home laundry equipment section in this city.

Contestants used the series of displays known as the "Sell-Shock" series, designed to simplify and strengthen the effort of the washer and ironer dealer who in times past has had considerable difficulty in reducing his product features to the point where he could effectively stop passers-by and put across his message. There were eight separate displays in the original series, but the first piece was used by most of the contestants as General Electric promised to double the amount of each prize awarded to a window during National Washer and Ironer Week, Oct. 24-29.

Given practically identical display pieces on which to base the windows, the winning dealers produced original variations.

The first prize of \$200 was awarded to the Palace Department Store of Spokane, Wash.; second prize of \$150 went to the W. W. Mertz Co. of Torrington, Conn.; and third prize of \$100 was won by Prottas & Levitt of Seattle. Four awards of \$50 each were given to Peabody Electric Appliance of Peabody, Mass.; Bartlesville Electric, Bartlesville, Okla.; McCoys, Inc., Waterbury, Conn.; and Central New York Power, Syracuse, N. Y. A prize of \$25 was awarded to the Joslin Dry Goods Co. of Denver, and awards of \$20 each went to R. S. Montgomery, Inc., Richmond, Va.; Hartmann Hardware & Supply, Somerville, N. J.; Ott Hardware Co., Santa Barbara, Calif.; and Triangle Electric Co., Muncie, Ind.

Minnesota Dealers See '39 Norge Line

ST. PAUL—Norge dealers in the St. Paul area previewed the 1939 line of Norge household appliances at a meeting last week in the Ryan hotel. H. D. Vestal, vice president and general sales manager of Reinhard Brothers Co., distributor, was in charge of the meeting and addressed the group. Other speakers were Jack Tenney, N. M. Forsythe, and Ray Roy.

N. Y. Dealers Prophecy '39 Increase—It's 41%

LONG ISLAND CITY, N. Y.—A sales increase of 41.2% in 1939 was predicted by General Electric appliance dealers in the New York metropolitan area, who attended a recent preview of new models of G-E refrigerators and ranges at the Rex Cole building here.

As each dealer principal registered, he was asked for his estimate of the increase in sales expected. He was not shown estimates of other dealers before announcing his figure. Hence, in the opinion of Rex Cole, General Electric distributor, the 41.2%, which represents an average of all the figures given, can be regarded as a fairly accurate cross section of dealer opinion in this territory.

Haynes To Represent Marlo on Coast

SAN FRANCISCO—Merle G. Haynes has been appointed Pacific Coast representative of Marlo Coil Co., St. Louis manufacturer of fin coils for electric refrigeration. His office will be at 703 Market St.

Thomas Shipley, Inc. To Distribute York Units

YORK, Pa.—Thomas Shipley, Inc. has been named distributor for air-conditioning and refrigeration equipment of York Ice Machinery Corp. and for heating equipment of York Oil Burner Co., Inc. in York, Adams, and Franklin counties of Pennsylvania.

The company also distributes the York "Cool-Wave" portable air conditioner in York and Adams counties under franchise of Philco Radio & Television Corp., which is handling sales of this product.

W. K. Read is vice president in charge of the Shipley organization, Curtis A. Bott is manager of equipment sales, and Martin B. Beline is engineer in charge of installation and service.

South Jersey League Honors New Officers

CAMDEN, N. J.—Newly elected officers of the Electrical League of South Jersey were officially installed Jan. 20 at Hotel Walt Whitman here as part of a celebration marking the league's fourteenth anniversary.

Officers installed were: C. Robert Jentner, president; Charles Commbe, vice president; Isadore Bornstein, treasurer; Howard W. Suckling, secretary.

M & M Co. Appointed Hotpoint Distributor

CLEVELAND—The M & M Co., with headquarters here and branches in Akron and Columbus, is now distributor of Hotpoint refrigerators, ranges, and other appliances in northeastern Ohio, succeeding the George Worthington Co., reports W. H. BonDurant, district manager here for Edison General Electric Appliance Co., Inc.

George H. McLean is president of the distributorship, J. Q. Herron is secretary and treasurer, R. F. Stump is general sales manager, A. J. Wisneski is purchasing agent, and E. A. Moritz is credit manager.

Salesmen for the firm include George W. Stubbs, C. V. Patterson, J. T. Kirby, John H. Winch, R. J. Fink, J. A. Sneiderwin, and C. V. Brown. Service manager is H. D. Hill.

P. L. Tompkins is manager of the Akron branch, with Don S. Lantz and E. Maurer as salesmen and Richard Carnes as service manager.

Powers Directs Sales For Sorenson Co.

DES MOINES, Iowa—M. E. Powers has been appointed sales manager of the H. E. Sorenson Co., distributor for Crosley radios and refrigerators and ABC washers and ironers.

South Bend Electric To Represent G-E

SOUTH BEND, Ind.—The South Bend Electric Co. has been appointed distributor for General Electric ranges and refrigerators, now handling the entire line of General Electric appliances. The company has remodeled its sales rooms and increased the sales staff.

Roy Van Maren Opens Fresno Dealership

FRESNO, Calif.—Opening of Fresno Refrigeration & Heating Co. at 2130 Tuolumne St. to distribute refrigerator and air-conditioning units and accessories in Fresno, Kings, Tulare, and Madera counties has been announced by Roy Van Maren.

Mr. Van Maren formerly was a partner in Reliable Refrigeration Co., Bakersfield, Calif.

Albert Hofeld Forms Own Jobbing Firm

NEW YORK CITY—Albert Hofeld, veteran of some 10 years in the refrigeration industry and former associate of Sam S. Glauber, has established a refrigeration and air-conditioning parts and supply business under the name of Albert Hofeld, Inc. at 33 W. 60th St. here.

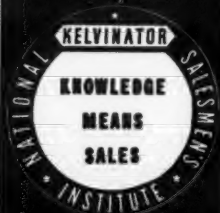


Every Brunner Unit is tested for Underwriters' Laboratories Approval and Carries the U. L. Seal

● BRUNNER precision plays a dual role in reducing the cost of commercial refrigeration... First, there's the contribution of precision to performance. All vital parts throughout the Brunner construction are machined to exact fit—cylinders, pistons, bearings, valves. The practical results are markedly reduced friction and wear, minimum losses due to leakage, and greater all-round operating efficiency. And as an added economy, Brunner precision means perfect interchangeability of parts and thus reduced maintenance expense should re-

placements ever be needed... In the manufacturing process, too, Brunner precision promotes economy—the economy of lower first cost. For precision requires simplification and compactness of design, and this demands more efficient manufacture. A more favorable selling price is the natural result... So whatever your refrigerating or air conditioning problem, save "B. T. U. dollars" through Brunner precision. Air and water cooled units from ¼ H. P. to 15 H. P. Catalog on request. Brunner Manufacturing Company, Utica, N. Y., U. S. A.

The Symbol of **BRUNNER** Dependability



INCREASE YOUR *Money* KELVINATOR NATIONAL



Sidney Edlund • President Kelvinator National Salesmen's Institute

THE Kelvinator National Salesmen's Institute has prepared a remarkably practical study course. Outstanding value of the course is the way it weaves together sales theory and sales practice so as to be of constant daily use to retail appliance salesmen.

At the head of the Institute is Sidney Edlund, a man who has already achieved national prominence through his work in training men in a number of different industrial organizations.

Mr. Edlund always talks as if he meant business and never more so than when we asked for a brief statement of his plans.

"I recognize the need," he said, "for training men and training them right. It's not, of course, the first time I've participated in a drive of this kind but I'm free to say I never before set my sights for so splendid a goal or felt myself in more stimulating company."

"For not only is this Institute project a 'hot' plan in the best sense of the word, but the 'student body' looks to me the best timber any organizer could be called on to shape."

"I congratulate them on being tied in with a business one of whose leaders thought up this inspiring plan; and I congratulate Kelvinator on being able to muster the kind of manpower to insure its success."

"'Lucky for us,' one dealer said to me, 'that Kelvinator is in the appliance business!' And plenty more of them are going to follow that star and join the Kelvinator family."

"The soundness of the whole set-up is reflected in the Institute's personnel. William Rados, for example, brings an unusually broad experience in man-training and building to the Manager's post. He will have entire charge of the preparation of the Institute's program and maintain constant contact with the salesmen."

"The Institute will have also an Advisory Council of eighteen retail salesmen, three from each Kelvinator region, who will pass upon the entire program in all its details before it is put into operation. We're all going to learn things together—it's that kind of plan."

"If you were only half as sold on this project as I am you wouldn't need urging to write in now for the Institute's booklet."

"Help us to help you—that's about the gist of this broad-gauge project and of my message. That—and the pledge of a fraternal greeting to all members from myself and everybody else on the staff."

Solve the 3 Big Problems Faced By the Appliance Dealer Today

- MAKE EVERY SALESMAN PROFITABLE
- GET GOOD SALESMEN
- KEEP GOOD SALESMEN

ALL THIS MAY SOUND like a big order, but when you get the sensational details about the Kelvinator National Salesmen's Institute, you'll see that the Institute can deliver. In fact, those who have seen the Institute program in its entirety—its organization, its personnel, its comprehensive plans—have declared it to be the greatest step forward in sales education ever taken by any manufacturer in the appliance field.

We can't tell you the whole story on this page—just the high spots—you'll have to send for the booklet to get all the facts.

First of all, the Kelvinator National Salesmen's Institute is staffed with men of outstanding prominence in the field of sales education.

Second, it has only one job to do—to enable salesmen to make more money . . . for themselves and the dealers for whom they work.

Third, it provides not only a complete selling course—covering products, general salesmanship, and the use of promotional campaigns—but offers every salesman a real incentive to finish the course and profit by its use.

Kelvinator has established the Institute because it believes that more effective sales education is the greatest need of retail dealers today. We have planned the Institute to prove that its three main objectives can be attained.

And only those dealers who sell Kelvinator

household appliances in 1939 will have this effective, three-edged selling tool.

Talk to your Kelvinator distributor—or to his wholesale man—*now*, about the Institute. Or clip the coupon for a booklet that will give you the entire story. KELVINATOR DIVISION, Nash-Kelvinator Corporation, Detroit, Michigan.

FORGET EVERYTHING YOU HAVE EVER KNOWN ABOUT "SALES TRAINING"

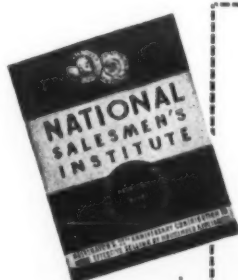
Kelvinator invites every household appliance dealer who is interested in making more money in 1939 to send for the free booklet and get the complete story. There will be no charge or obligation.

Just tear off the coupon below, and the booklet will be sent to you.

In a month or two, the entire industry will be talking about the Kelvinator National Salesmen's Institute, and you should know the facts—even though you are not now a Kelvinator dealer.

Clip the coupon now, or call the nearest Kelvinator distributor, and you will get the whole story about the most sensational program ever undertaken in appliance selling.

It's new—it's different—it's sound—and it's going to get results for every dealer who uses it . . . and for every one of his salesmen.



KELVINATOR NATIONAL SALESMEN'S INSTITUTE • 14250 Plymouth Road, Detroit

Please send me a copy of your booklet on the Kelvinator National Salesmen's Institute. I understand that this request places me under no obligation whatever.

DEALER'S NAME.....

ADDRESS.....

CITY.....STATE.....

MAIL
THIS
COUPON
TODAY

AC-28

Making POWER THROUGH SALESMEN'S INSTITUTE

The Refrigerator That Was 25 Years in The Making

Today Kelvinator is proud to present the climax of 25 years of planning, pioneering, and achievement . . . the beautiful new Silver Jubilee models.

Completely new . . . in design, beauty, and mechanism . . . we believe it is as revolutionary as was the very first electric home refrigerator, which was made by Kelvinator.

Here are just the quick facts. For the rest of the story, talk to your Kelvinator distributor.

The Polarsphere . . . most efficient of all refrigerating units, proved so trouble-free that it is now sealed away forever in a dome of steel. Has power capacity to keep 5 refrigerators cold.

Dry Storage Bin for Vegetables . . . extra storage space . . . onions, potatoes, turnips can be kept handy in this metal locker.

Steaks and Chops kept fresh and juicy for days in this glass-topped Cold Chest. Holds up to 14 lbs. of meat cuts.

Speedy Cube Release loosens cubes in a flash —by an easy lift of a lever. You get 72 big ice cubes for 1¢ at national average electric rates.

Twin Glass-topped Vegetable Crispers let you see at a glance inside. Salad greens and vegetables are kept fresh and crisp for days.

New Wider Front increases capacity without increasing size. No more fumbling, groping, "knocked over" dishes, etc.



1914

Celebrating the 25th Anniversary of the
Oldest Maker of Electric Refrigerators

1939



Silver Jubilee

KELVINATOR

Major Appliances

New Kind of 'Two Compartment' Cooling Used In One Series of 1939 Frigidaire Line

(Concluded from Page 1, Column 5)
air circulation from one to the other, the glass shelf providing a tight seal on all four sides.

"In the center of the top section is a standard freezing unit hung in the conventional manner, and providing refrigeration to this section by means of conventional air circulation. Ice freezing, dessert freezing, and below-freezing storage functions of previous refrigerators thus remain unchanged, while at the same time ample food storage space is provided in the upper section for all articles of food which are not susceptible to rapid drying or discoloration in cold circulating air, and which depend for preservation almost entirely upon the factor of low temperature alone.

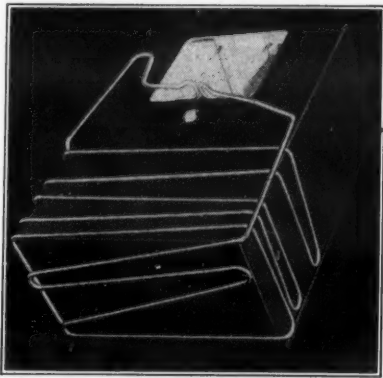
"Examples of these are eggs, certain types of berries, milk, beverages, dressings and other foods in containers, and canned goods temporarily stored for chilling purposes. "In the lower section, remarkably improved results in the whole science of food preservation have been achieved in connection with other types of food by a unique application, in combination, of the factors of low temperature and very high moisture content, coupled with the abandonment of air circulation as a means of heat transfer.

"Concealed within the walls of the lower section, and immediately behind the porcelain lining, is a series of refrigerating coils, which, with the exception of the door area, surround the entire section, accomplishing the cooling function largely by means of the radiant principle of heat transfer.

"Because of this principle, the resulting tendency to practical equalization of temperatures in the entire section, and the impossibility of additional heat reaching the food compartment from at least five sides by reason of the concealed refrigerant coils, air circulation is reduced to a degree almost unmeasurable.

"Because the refrigerant surface represented by the refrigerant coils is many times that of a conventional

Tubing on Liner



Here's how the "Cold Wall" principle is applied. The tubing shown is a completely sealed and entirely separated secondary system, and the refrigerant in it, being hermetically sealed in, never leaves the system. Heat gathered from the "Cold Wall" section is passed to the regular freezer unit in the top compartment by conduction through metal-to-metal contact, with refrigerant condensation resulting through low temperature, rather than by mechanical compression.

freezing unit, refrigerant temperatures permitted are correspondingly high, with the tendency for condensation correspondingly low, resulting in relative humidities of 85% and higher being maintained throughout the entire lower section.

"Although the 'Cold Wall' section requires its own refrigerating coils, the method by which refrigeration is provided to them is so simple as to be unique. Not a single moving part has been added to the standard refrigerator, as represented by the top section.

"The 'Cold Wall' cooling coil is nothing but a series of loops of a continuous length of tubing, filled with 'F-12' refrigerant in such quantity as to be partially liquid and partially gas, as in a regular unit.

"But there is no physical connection between the refrigerant in the upper freezer and the refrigerant in the tubing. That in the lower tubing is hermetically sealed as a separate system. Only a small length of this lower tubing is attached to the exterior of the upper freezer unit.

"Heat from the gas in the secondary system passes to the freezer unit by conduction through the metal walls. There is no physical mixture of the two gases. Heat-laden gas from the 'Cold Wall' section, rising to a point adjoining the freezer, is immediately condensed by the low temperature of the freezer instead of by direct compressor operation.

"The secondary system is entirely separate from the regular refrigerator system, using the 'meter-miser' compressor and evaporator, both of which have been retained in their original form.

"Load on the compressor remains approximately what is would be under conditions of conventional design. Conditions in the 'Cold Wall' section respond to the action of the cold control equally with those in the upper section.

"Although the freezing unit in the upper compartment remains standard size, with standard ice capacity, and has only about one-half the standard area to refrigerate by direct air contact, excess cooling is prevented by surrounding the refrigerant-filled unit with an outer metal shell, separated from the inner metal by a narrow air space.

"In this manner, frosting, with the consequent necessity for defrosting, is reduced, while ice freezing is as fast as ever."

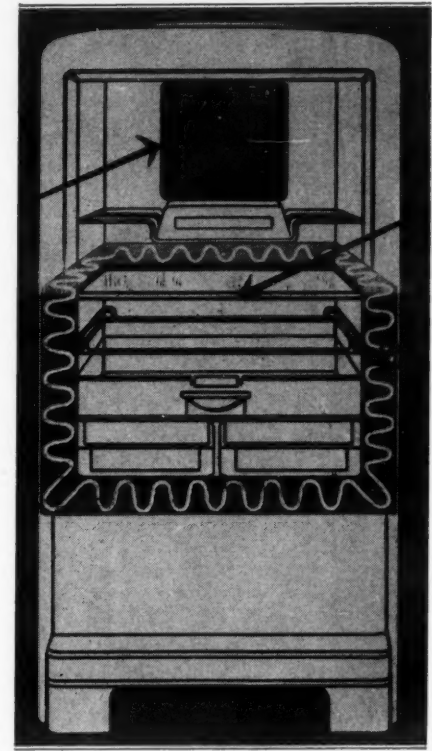
Complete 1939 Frigidaire line incorporates three basic series—Special, Master, and Cold Wall—in addition to the "Super Value" six mentioned previously. Compressor, freezing unit, and cabinet construction are standard throughout the line, with price differential accounted for by the presence or absence of various accessories and conveniences.

Suggested Zone 2 retail installed prices of the 1939 Frigidaire line, including the regular \$5 protection plan charge, are:

Model	Price
DA-3	\$119.50
DA-4	139.50
Super Value 6-39	149.75
Special 5-39	159.75
Special 6-39	179.75
Master 4-39	159.50
Master 5-39	179.50
Master 6-39	204.50
Master 8-39	249.50
Cold Wall 5-39 (Porcelain)	214.50
Cold Wall 6-39 (Dulux)	229.50
Cold Wall 6-39 (Porcelain)	244.50
Cold Wall 8-39 (Dulux)	274.50
Cold Wall 8-39 (Porcelain)	289.50
Imperial	449.50

Chief accessory feature added to the line this year is the "Meat Tender," a container designed especially for storing fresh meat. It is located directly under the freezing unit, and has been designed to perform two functions: to control air circulation, and to expose all exterior

How 'Cold Wall' System Works



The freezer unit freezes ice and refrigerates the top compartment as usual.

(1) The "dew-fresh seal," a solid glass partition, divides the cabinet into 2 compartments.

(2) The lower compartment is refrigerated directly through the walls by concealed refrigerating coils.

This photo-drawing depicts the theory behind the "Cold Wall" principle used in the new Frigidaire. Sides, bottom, and back have refrigerating coils behind the porcelain lining.

surfaces of the meat to this circulation.

Meat rests on a stainless steel bar rack, which permits air to entirely surround it. Circulation is provided by vents in the side of the container, which are designed to prevent both excessive drying and excessive sweating. The feature is standard on Cold Wall and Master models. It

'Meat Tender' Ventilated



Here's the Frigidaire "Meat Tender," located right under the freezer unit, and ventilated so as to provide circulation of air.

also can be used for storage of ice cubes, frozen foods, and desserts.

Control panel has been simplified to consist of a single control knob, termed the "Unimatic" control. By means of this one control, the cabinet can be made warmer, colder, defrosted, or turned off entirely. It is standard on all models.

Steel cabinet exterior shells are made entirely in one solid structure. There are no separate tops, front aprons, or legs to attach, and no seams to gather dirt. Exterior hinge plates have been replaced by special concealed ball-bearing suspension devices, giving a smooth, unbroken contour to the front.

In all Master and Cold Wall models, the two lowest ice trays have been combined into a twin tray, providing a single tray of double width for handler storage and freezing of desserts, or storage of frozen foods in cartons. The tray has half-gallon capacity. For ice freezing, twin grids are placed side by side, providing the full capacity of two trays.

Interior lighting in all series has

been moved from the top to the center of the rear wall, beneath the freezing unit and out of the line of vision during normal usage. Improvements also have been made in connection with the removable sliding shelves, hydrator suspension and removal, freezer door, door opener, food safety indicator, and other items, it is said.

Improvements in the "meter-miser" compressor and in cabinet insulation are said to have contributed to operating cost reductions.

Pittsburgh Dealers Air Views on Finance Plans

(Concluded from Page 1, Column 4)
half sell the repossessed goods at cost, and the others at a loss.

That there is a general dissatisfaction with current general finance plans is indicated by the fact that 71% of the distributors and 57% of the dealers reported they had some sort of financing arrangement of their own, which they resorted to in some degree.

Regarding credit investigations, half of the distributors thought a charge of \$2 for this service was all right; the other half thought a \$1 charge would be more fair. In the dealer ranks, 71.4% approved a charge for credit investigation work. Suggested as alternates to finance plans now being used here were those offered by First Banccredit (FHA), Colonial Trust, and bulk purchase of leases.

Other rather pertinent suggestions which came out of the finance study were:

A hold-back of 10% was considered too great to keep the dealer in business.

After four monthly payments, the finance plan should be non-recourse on the dealer.

The higher charge of one finance company is considered justified by its collection follow-up service.

A charge of 6% on the unpaid balance was considered "too high to compete."

Finance companies' plans should include the cost of credit investigation work.

Stock in the finance plan should be subscribed for and owned by distributors.

85.7% of the distributors covered in the study said they would be interested in a new finance plan with reservations and modifications. 71% of the dealers reported likewise.

Here's why Combustioneer is Easier to Sell



Yes, here's a stoker that has proved its ability to make money for dealers. With Combustioneer, you make more sales, easier sales and cleaner profits. Here's why:

1 Combustioneer is a pioneer. The result of a quarter century of experience. Its quality and dependability are known.

2 Priced to sell. With its price leader, Combustioneer has a model to meet every demand. And every model is priced to offer more stoker for the money.

3 Exclusive Features. For years Combustioneer has paced the industry with new and important developments. Today, Combustioneer dealers have exclusive features which close sales. Only Combustioneer

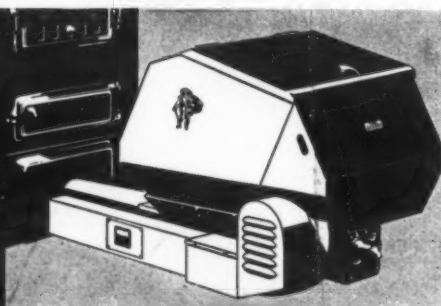
dealers have the sales advantage of the Automatic Respirator, the greatest air regulator in the world... the amazing Breathing Fuel Bed... the only Transmission which causes a scientifically correct agitation of the fuel bed... the Knee-Action Clutch... the Back-Draft Stabilizer, and other features.

4 Localized Sales Helps—that create prospects and boost dealer profits.

5 Here's opportunity for dealers who want bigger profits and easier profits. Write us for the proof that Combustioneer is the opportunity of the stoker business for 1939.

COMBUSTIONEER DIVISION, THE STEEL PRODUCTS ENGINEERING CO. Springfield, Ohio

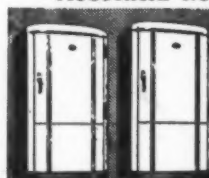
Combustioneer
AUTOMATIC COAL BURNER
FOR HOMES, APARTMENTS, FACTORIES



TWO PROFIT OPPORTUNITIES

Copeland
Household Refrigeration

Copeland
Commercial Refrigeration



Both products of 20 years experience. Both recognized by experts as the "last word" in modern refrigeration—efficient, thrifty, long-lasting. Write today for facts about either or BOTH of these Copeland Profit Opportunities.



COPELAND REFRIGERATION CORPORATION
Sidney, Ohio

PERSONALITIES

By George F. Taubeneck

Romance Comes Again To 5229

One of the prettiest romantic tales of the year will not be told in the love-story magazines, or be seen on the screen. It happened right here in our own offices, and culminated in the marriage Jan. 22 of Alfred Jones, staff reporter, and Rita Clifford of the subscription department.

Some three years ago, when he was only 19, Al Jones joined our editorial department as a cub reporter, errand chaser, and doer of odd jobs. He had come to America from England with his family when he was 11 years old. Al's work improved, his quiet demeanor and unflagging taciturnity earned him the respect and affection of the staff, and he became a staff reporter.

Rita, in the meantime, had joined the subscription department. She lived out Al's way, and he got into the habit of calling for her in the morning, and taking her home in the evening.

Although Al has the highly commendable English habit of minding his own business, sometime, somewhere along those trips he learned that Rita also had come to America from England as a child. He also observed that Rita was a very attractive girl, with a wealth of red hair and a graceful carriage.

After that, well, things just sorta happened; and Al and Rita went into a real American romance. It made you feel good just to watch them.

A little later in the spring they're going on a delayed honeymoon to England, to revisit the scenes of their childhood. Al plans to call on some refrigeration concerns while he's there. The NEWS hopes all English subscribers will be on the lookout for this storybook pair, and will welcome them home.

Only 87% Increase

H. E. HUMPHREYS, Servel commercial refrigeration distributor in Concord, N. H., feels pretty sad about 1938. He increased his business in 1938 only 87% over 1937. It was the first year in four he hadn't shown at least a 100% increase over the previous year.

Other distributors at Ed Terhune's eastern conference joined Mr. Humphreys in weeping over his disgrace and chagrin.

Tired of It All

As befits a staunch New Englander from the fundamentally American state of New Hampshire, Mr. Humphreys has a number of explosive views about the New Deal. And he contributes to this column the following verse and set of statistics:

TIRED OF IT ALL
I'm tired—Oh, so tired—of the whole New Deal
Of the juggler's smile, the barker's spiel,
Of the Mushy speech of the loud bassoon;
And tired of all of our "Master's croon."

Tired of the tax on my ham and eggs,
Tired of "Pay-off" to political yeggs,
Tired of Jim Farley's stamps on my mail,
Tired of my shirt with its tax-shortened tail.

I'm tired of farmers goose-stepping to laws,
Of millions of itching job-holders paws;
Of "Fireside Talks" over commandeered mikes,
Of passage of laws for promotion of strikes.

I'm tired of the hourly increasing debt,
I'm tired of the promises still to be met,
Of eating and sleeping by government plan,
Of calmly forgetting the "Forgotten Man."

I'm tired of unworkable Brain Trust thoughts,
Of using the navy for fishing yachts,
I'm tired of cheating the courts by stealth,
And I'm terribly tired of sharing the wealth.

I'm tired of Eleanor on page number one,
Of each royal in-law and favorite son,
I'm tired of Sistie and Buzzie Dahl,
I'm simply completely fed up with it all.

I'm tired and bored with the whole New Deal,
With its juggler's smile—its barker's spiel;
From our loyal, American, clean, honest men,
Lord, give us a Cleveland or Coolidge again.

Anon.
United States Population 130,000,000
Less:
Eligible for pensions..... 46,900,000
Too young to work..... 35,000,900
Government employees ... 35,000,090
Unemployed 13,090,008
129,999,998

Balance left to produce
United States wealth..... 2
You and I, and I'm tired out. It's your move!

Welcome, Mr. Fleischer

We found one Servel eastern distributor who wasn't acquainted with AIR CONDITIONING & REFRIGERATION NEWS. He promptly straightened that out by plunking down a five-dollar bill (luckily we had the dollar change) for a year's subscription.

He is A. Fleischer, Servel and Temprite distributor and service man of Orange, N. J.

Welcome, and happy and profitable reading, Mr. Fleischer!

(When a commercial refrigeration man isn't a subscriber to the NEWS, that's news!)

Old Subscribers

Among the old subscribers who were kind enough to come around and express appreciation of the service rendered them by the NEWS over a period of years were:

William F. Wieboldt, electrical contractor, refrigeration service, and Servel distributor of Walden, N. Y.

C. L. McIntyre, president of Cook Sales Corp., Boston.

Thomas J. Jeffrey, T. B. Beardsley, John J. Daley, Parsons Bros., Bridgeport, Conn.

T. R. Matthews of Majestic Refrigerator Corp., New York City. Mr. Matthews is a product of Terre Haute, Ind., which isn't far from Evansville (where Servel products are manufactured) and which is just a whoopannaholler from Marshall, Ill., where the writer boyhooded.

Lin M. Butler, general manager of the industrial division of American Radiator Co.

Frederick G. Volz, president of Champion Sales Co. of Philadelphia. Mr. Volz was brought up in the refrigeration and ventilating businesses, but says he has steered clear of air conditioning because it has been in such a mess.

Paul D. Kingberry of Kingberry Engineering Corp. (refrigeration, air conditioning, and electrical engineering), Perth Amboy, N. J. Mr. Kingberry came to America from Vienna many years ago, and says he has carefully saved the "Around the World" articles and pictures on Vienna. His wife, who came over from Finland, has done likewise with the series on Denmark and Sweden.

Servel's Gas-Fired Commercial Unit

Those who have heard talk of the new gas-fired commercial refrigeration apparatus offered by Servel, Inc., maker of the Electrolux home refrigerator, might be interested to learn that the Industrial Gas Section of the American Gas Association has assigned a group of commercial gas utilization experts to the job of studying this new gas-operated equipment and the markets for it.

Known as the Commercial Refrigeration Committee, it will be chairmanned by Roy P. Wilson of the Philadelphia Gas Works.

At the moment, some 1,500,000 American homes are equipped with gas-fired Electrolux household boxes. The new committee, hoping for

indications of like results in the commercial field, will pay careful attention to the cost factors involved in the use of the new gas units by all manner of retail establishments.

Numerous test installations of the new Servel units are operating in various stores and kitchens in larger cities; and the new committee will make detailed cost and performance analyses of these "actual cases."

It is expected that by the time the committee is asked to report at the A.G.A. convention in New York City this October, it will have assembled data from which it will be possible to make recommendations and possible public announcements.

Success Story

Charles W. Nash, who rose from a penniless farmhand to become the head of giant General Motors Corp. and then resigned to create an independent motor car business of his own, celebrated his seventy-fifth birthday, Jan. 28.

In comparing youth's opportunities today in this country with those existing when he started out in the business world, the chairman of the board of Nash-Kelvinator observes that "the United States presents greater opportunity for youth today than it ever did before," and that "youth has more chance for accomplishment here than in any other country in the world."

The veteran auto maker's life story reads like an American Magazine success story. He was born near Chicago in 1864, moved to Flint, Mich., when very young, and before he was 12 years of age was thrown on his own as a "bound boy."

He ran away, worked as a farmhand to buy school books and obtain what little schooling he had. He added carpentry to his achievements and worked at this trade and farming until he was 27, never making more than \$300 in any one year.

The turning point came in his life when he left farming and came to the city of Flint, Mich., and obtained a dollar-a-day job in a grocery store. He was forced to do this to obtain medical attention not available in rural Michigan for Mrs. Nash.

Later, he obtained a job in a wagon plant run by J. D. Dort and W. C. Durant, pioneers of the automobile. He was a carriage trimmer for some time when Mr. Dort called him in (Nash thought to fire him) and gave him the job of superintendent.

Mr. Nash stayed in the wagon business 19 years, and then, sensing that it was destined to give way to the automobile, went over to the ranks of the early motor car makers, joining with his old employer Mr. Durant, who had formed General Motors Corp. He became head of Buick. Under his leadership, Buick's profits went from \$800,000 in 1911 to \$12,000,000 in 1914.

In 1913, his Buick record caused the financiers behind General Motors to turn the entire corporation over to Mr. Nash. He was named president, and three years later had increased profits six times.

Successful beyond his fondest dreams, Mr. Nash, with the farmer's philosophy of independence inbred in his soul, was unhappy. He resigned to set out for himself again. Nash Motors Co., which was merged with Kelvinator Corp. in 1936, was the result. He started Nash Motors in 1916 with a five million dollar invest-

ment, and in the next 10 years directed it to profits of \$80,000,000.

Back to Sanity

New York newspapers are among the world's best, but in recent years they have been depressing to read. Chronicling economic distress and economic insanity, political shenanigans and political hooliganism from front to back, they have made us wonder if the whole country weren't going to the demnition bowwows.

This trip, however, they were much brighter. It would seem that the nation is returning to sanity.

For example, the Friday, Jan. 27, World-Telegram carried as three of the biggest, featured stories on page one the following:

A dispatch from Lima stating that lightning had ripped all the clothes from a woman pedestrian, and in so doing, had destroyed her power of speech. A man who witnessed this calamity, however, had his power of speech restored by the spectacle. (The editor wondered what it was he said.)

A Kentucky hen, whose abode had just been illuminated through the good offices of the REA, celebrated her pleasure by laying an egg shaped like an electric light bulb.

A hospital patient, trying to amuse himself, hatched a live chicken from a hen's egg by cradling it under the covers for 25 days.

We submit that when the editor of the World-Telegram feels that readers are more interested in amusing trivialities than in Washington, Spain, or Hitler, we must be well on the road to the peace of mind which fosters good business.

"Sharp Tuning"

Sets New Standards of Automatic Temperature Control

*Trade-mark for White-Rodgers Device Registered, 1938, White-Rodgers Electric Co.



"Sharp Tuning"

In a radio, accuracy which insures undistorted reception. In a control, accuracy which insures perfect automatic regulation of temperature.

WHITE-RODGERS "Hydraulic-Action" Achieves Amazingly Accurate Performance



Just as "Sharp Tuning" selectivity brought new standards of radio reception, so White-Rodgers "Hydraulic-Action" with "Sharp Tuning" brings new performance standards in automatic temperature control. "Sharp Tuning" permits visible-dial selection of actuating temperature and differential with

positive accuracy throughout the entire range of the instrument.

But "Sharp Tuning" accuracy is only one of the many big advantages of White-Rodgers "Hydraulic-Action" Control. This new operating principle permits the use of a high load capacity switch and provides a positive snap-action and contact... never before possible... which make controls immune to any normal vibration or "off-level" installation. White-Rodgers controls are easily installed and require no service attention. They cost no more than other far less accurate controls.

Specify and Install WHITE-RODGERS Controls on Your Equipment

See that your Air Conditioning and Refrigeration equipment has the most modern, efficient and dependable controls available... by specifying and installing White-Rodgers "Hydraulic-Action" Controls. They not only provide "Sharp Tuning," but are sturdily constructed to give years of trouble-free service. Get full information by mailing Coupon today.

WHITE-RODGERS ELECTRIC CO.

1209 CASS AVENUE • ST. LOUIS, MO.

"Hydraulic-Action" controls are also available through Julien P. Friez & Sons, Baltimore, Md., Division of Bendix Aviation Corporation, for 63 years the Makers of America's Weather Instruments.

There's a WHITE-RODGERS "Hydraulic-Action" Control for Every Service Need.

Milk Cooler Control with Manual Reset Button

The range of this control is 33° to 55° F. The reset button permits the user to start the compressor immediately when loading the cooler with warm milk. Milk cooler users have discovered through experience that these controls are... accurate regardless of changes in ambient temperature... setting not affected by change in altitude... bulb may be located in any position without affecting accuracy.



TYPE 1639

MAIL COUPON FOR DETAILS

WHITE-RODGERS ELECTRIC COMPANY
1209 Cass Ave., St. Louis, Mo.

Gentlemen: I am interested in White-Rodgers "Sharp Tuning" for (type of product) _____

Firm _____

Individual _____

Street No. _____

City _____ State _____

ACRN-239

Commercial Refrigeration

Consumer Education & Reduction of Expense In Distribution Called Frozen Foods' Need

By James McCallum

DETROIT—Consumer education is still the passkey to frozen food sales, in the opinion of Don Graubner, sales manager of Frozen Products, Inc., distributor throughout the state of Michigan for several lines of fresh frozen fruits, vegetables, sea food, and poultry.

"This type of merchandise," he declared, "is still a novelty to most people, an unknown quantity to many. It has not yet reached such a degree of public acceptance that a housewife will go into a store and ask for a package of Booth Tastyloins as she might for a box of Post Toasties or a can of Campbell's soup."

"Frozen food still is definitely a specialty item and must be merchandised as such. It is this need for constant promotion and personalized, instructive selling that we try to keep uppermost in our minds while carrying on our activities in the frozen food field."

'TOO MANY FINGERS'

But a distributor of frozen foods has other problems, too, as Mr. Graubner's story of his company's operations revealed.

"One evil of many frozen food distribution set-ups is that too many fingers get into the pie between the time the product leaves the packing house and the time it reaches the consumer," he pointed out. "In some instances, the food is handled by as many as four different agencies, with the result that by the time the food reaches the consumer it bears a mark-up of approximately 80% and thus an exorbitant, practically prohibitive retail cost."

'MIDDLEMAN' CUT OUT

"In our organization, we have tried to eliminate all possible 'middlemen,' and thus to bring the retail price of the food within reason. We buy our food directly from the packers, who ship it to us directly from their plants and warehouses by means of railroad cars (most of which are cooled on the brine tank principle) or trucks refrigerated with dry ice. Naturally, regardless of the method of shipment, the usual precautions must be taken to see that the necessary temperatures are maintained en route."

"Having our offices right in the Detroit Harbor Terminal Bldg. places us in an advantageous position to receive frozen food shipments, for we can remove the food from the trucks or railroad cars and immediately place it in our refrigerated warehouse space here. By warehousing our food in this way we can

maintain a large enough stock to meet practically any demand.

"After getting the food, our next problem, of course, is to sell it. To accomplish this we have a sales force of seven men, five of whom operate in the Detroit metropolitan area while the other two handle outstate sales."

"In Detroit we act as a distributor, selling the food directly to retailers or to institutions, such as hotels, restaurants, schools, etc. Throughout the rest of the state we function as a jobber, selling the food to some 60 different distributors whom we have appointed."

"Each of these distributors maintains its own retail and institutional operations. Many of the firms chosen as distributors were ice cream manufacturers or dairy companies which already had available the refrigerated storage space and shipping facilities necessary for the handling of frozen foods."

SELL CASES TO USERS

"Not only do we supply frozen food to the outlets which we service, but we also sell these outlets the cases in which to store this food. Proper storage facilities are, of course, an absolute essential to frozen food merchandising, and we feel that the most satisfactory means of providing our outlets with such facilities is to sell them ourselves."

"If a dealer or distributor has any preference in the matter of cases, we will sell him any make he desires, providing we think that it will serve the purpose satisfactorily. If no preference is indicated, however, we sell the case which we think will do the best job."

"In every instance, we provide for both installation and servicing of the units we place in our dealers' stores. The installation problem is easily handled by our own men. Most of the cases are self-contained jobs, and all that needs to be done to set them in operation is to plug them in, remove the shipping bolts, and open the valves."

HANDLING SERVICE

"Service, on the other hand, is another matter. We guarantee one year of free service on each case we sell, but rather than maintain a corps of service men on our payroll, we sublet all of this work."

"During the guarantee period, all service calls come directly to us. We then relay these calls to the nearest factory representative of the manufacturer which supplied the compressor for the cabinet in ques-

tion. Bills for all such service work during the guarantee period are, of course, sent to and paid by our organization."

"After the guarantee period on any case has elapsed, we notify the dealer that our responsibility in this connection is ended, and give him the name of the proper service organization to contact whenever trouble arises."

Launching into a discussion of some of the "angles" involved in frozen food merchandising, Mr. Graubner had this to say:

TREND TO RETAIL

"Until recently, the big volume in the frozen food business lay in institutional sales. The better hotels and high grade eating establishments of all kinds were among the first to take to the frozen food idea. Gradually the rest of the institutional field tagged along, until now we sell to clubs, schools, bakeries, and even to some of the smaller restaurants and cafeterias."

"But lately the retail trade has developed so rapidly that it is demanding a major share of our attention, despite the fact that institutional sales still form a big part of the business."

"We have some 40 retailers in metropolitan Detroit, and more are being added every day. Practically all of these outlets are independently owned grocery or meat markets of one kind or another. We have found this type of store to be the only really satisfactory outlet in a metropolitan area."

"There are two reasons for this: first, because any customer entering this type of store is naturally food-minded; and, second, because it is only in this type of store that the clerks really have time or opportunity to present the personalized, instructive promotion which the frozen foods need."

DAIRY STORE PROBLEM

"Dairy stores, for instance, while a satisfactory type of outlet in out-state areas, don't do the right kind of a sales job here in the city. Nor can chain stores, because of the large scale of their business, devote the proper promotional efforts to a line of frozen food. And the fast-growing, serve-self super-markets are definitely out, inasmuch as they offer no means of individualized selling whatever."

"In addition to our salesmen, we also have a woman demonstrator on our staff. It is her job to start our new retailers off on the right foot by working with them for the first few days, showing them how to approach prospective customers and how to sell them on the merits of frozen foods."

DEMONSTRATOR BIG AID

"We have found this demonstrator to be our most effective dealer aid, but we also supply handbills and broadsides to be distributed in the neighborhood of each new outlet, little folders telling the story of quick-frozen food and giving instructions for preparing it, recipe booklets, and other forms of advertising and

promotional material. These helps, together with the colorful, attractive menu boards with which we try to equip every frozen food cabinet, seem to be doing a satisfactory merchandising job."

"The real secret of establishing an effective retail outlet for frozen foods, however, lies in first thoroughly selling the dealer himself on the product. For no matter how large a stock of frozen foods a dealer may carry, or how attractively he may have it displayed, he's not going to get results unless he himself is a frozen food enthusiast."

"The dealer who has never taken a package of frozen food home for himself and his family to try, who does not talk about frozen foods to his friends at every opportunity, who has not, in short, been sold 'a bill of goods' on the frozen food idea—that dealer will never sell a satisfactory volume of frozen food."

"In outstate territories, these same promotional methods are employed, only there our salesmen work through and with the distributors, rather than directly with the retailers."

USE REFRIGERATED TRUCKS

"To deliver the food to all our outlets, we employ a fleet of five trucks, some of which are refrigerated by dry ice and some by mechanical refrigeration equipment. After having used both types, we have found the mechanically refrigerated trucks to be more satisfactory for our purposes."

"We don't try to overload our dealers, but try to keep as great a variety as possible in their cases. We sell them only what we think they, in turn, can sell their customers. We like to have our retailers turn over their inventory every 10 days, and we plan deliveries accordingly."

Explaining how he happened to get into the frozen food business, which he has been interested in ever since its inception, Mr. Graubner stated that he had been active in the dairy business for some eight years, as both manufacturer and merchandiser of dairy products and frozen novelties. He also has sold commercial refrigeration equipment for use in this field.

This background of experience, combined with his long interest in quick freezing and its various applications, made the frozen foods field the next logical one for him to enter, he said.

PICTURE CHANGING

While discussing his company's activities in the frozen food business, Mr. Graubner repeatedly referred to and commented upon the extremely rapid growth which this industry has experienced recently and is still experiencing.

"That's the picture as it is today," he would say, "but tomorrow may tell a different tale. The industry is progressing so rapidly that it's hard to keep up with it, and no one can tell with any degree of certainty what the future—even the near future—will bring. It's today, yes; tomorrow, maybe; and three months from now—who knows?"

Hill In St. Louis

ST. LOUIS—Local sales office of C. V. Hill & Co., manufacturer of display cases and coolers, has taken a long-term lease on quarters at 2835 Olive St.

Alabama Food Concerns Start Use of 'Sterilamp'

BIRMINGHAM, Ala.—Several food dealers in the Birmingham district have recently installed Westinghouse "Sterilamps" in their refrigerated meat cases and walk-in coolers in order to take advantage of the germ killing value of ultra-violet radiation.

Installations so far have been made by Foremost Dairies, Redmont Market, A & R Food Store, and by McLester's Grocery Store. The dairy concern uses the lamp application for cottage cheese and the other concerns for meat, poultry, and turkeys.

As the lamps kill off bacteria, the dealers find they can raise the temperature and humidity in their refrigerators.

8-Foot Dairy Case Latest Tyler Model

NILES, Mich.—An 8-foot dairy refrigerator has been introduced by Tyler Fixture Corp. as an intermediate size to augment its prior line of cases in 6 and 10-foot lengths.

The refrigerator is designed to meet the requirements of self-service, semi-service, and service stores for the display of milk, cream, cheeses, butter, eggs, sandwich spreads, and other dairy and delicatessen items.

Arrangement of the case makes it possible for customers to help themselves to the displayed merchandise without the assistance of a store clerk.

Four double sliding doors are provided on the top display compartment, and the bottom compartment, for storage, has two swinging type doors with glass fronts.

The unit is of all-steel construction, with adjustable shelves, double-glass doors, porcelain front and light hood, and heavy coiling.

Fogel Products, Plans Outlined At Meeting

PHILADELPHIA—Fogel Refrigerator Co.'s 1939 lines of commercial refrigerated display cases, store fixtures, and market equipment were introduced to 100 members of Fogel distributing firms at a recent eastern sales session here.

Embodying the features which have characterized prior Fogel equipment, the new units are streamlined-designed, adding to gracefulness as well as substantial appearance.

William Fogel, president, presented a concise picture of the company's 1938 activities and a prospectus for 1939 in his talk at the dinner session.

Said Mr. Fogel, "The 1938 volume was the biggest in our 40-year history, materially increasing over all previous years in spite of depressions and recessions. Now, with the introduction of the 1939 line, we look for even greater volume."

The Fogel finance plan, designed to give material assistance to dealer and customer in the matter of financed contracts, was explained by Harry Fogel, credit manager.

Edward K. Raker, advertising and sales promotional manager, outlined the company's facilities available to all Fogel dealers as sales aids.

Why Curtis is the Extra Value Line

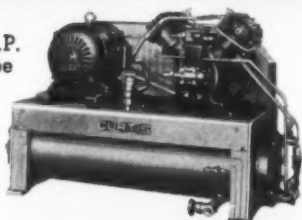


300 Ton Hydraulic Press

Illustrated at left is another operation in the manufacture of Curtis products, a huge 300 ton hydraulic press which shapes steel sheets and bars under the most accurate control. This press is utilized in making heads and shells for Curtis receivers and for other pressed steel forms used in Curtis products.

Such equipment as this is typical of the Curtis method of manufacturing—to create and fabricate Curtis products in the Curtis plant, under Curtis supervision from drawing board to the finished unit. Traditional standards of Curtis quality, engineering and precision methods are followed all the way. The result is the exceptional value reflected in the high efficiency, economical operation and dependable performance of every Curtis condensing unit.

The Curtis 15 H.P. Shell and Tube Condensing Unit.



"Builders of Condensing Units Since 1922"

CURTIS REFRIGERATING MACHINE CO., 1912 Kienlen Ave., St. Louis, Mo.
Division of Curtis Manufacturing Company

DRY

dry as Sahara

ANSUL CHEMICAL CO.
MARINETTE
WISCONSIN

ANSUL

SULPHUR
DIOXIDE
METHYL
CHLORIDE

THERE IS AN ANSUL JOBBER NEAR YOU

1. It is a man to material in able.

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Commercial Refrigeration

Proper Steps In Installing Commercial Refrigeration Equipment Which May Eliminate Most Service Complaints

Editor's Note: Mr. Licence believes that 90% of all complaints concerning the functioning of commercial refrigeration equipment are caused largely by improper application of the equipment, or improper installation.

In this article Mr. Licence makes several suggestions for the type of care that should be exercised in installing a commercial refrigeration system so that such complaints will be eliminated, and so that service costs will not be excessive. In a following article he will explain a procedure for dehydrating systems.

These suggestions should not only be followed by the installation man, but they should be advocated and checked by the dealer who sells the job.

By George C. Licence

Commercial Service Supervisor, Westinghouse Electric & Mfg. Co.

If it were possible to develop a new slogan with reference to commercial refrigeration installation and service I would nominate: "There is no substitute for care."

By the exercise of a reasonable degree of care many of the expenses borne by manufacturers, distributors, dealers, and service departments in particular, could be eliminated.

This is true regardless of the type or make of equipment involved. It is particularly true of Westinghouse and similar commercial refrigeration equipment where long-term warranties are involved. (I use Westinghouse as an example because I am most familiar with this equipment.)

For this reason our engineering and service personnel have given the subject considerable thought, have studied every possible approach to the subject, and have arrived at some rather definite conclusions regarding the methods to be employed and the procedures to be followed when making commercial refrigeration installations.

Many of the sins and errors blamed on the installation man and the service man have their origin in the improper application of condensing units and evaporative equipment.

CAUSES 90% OF TROUBLES

A rather comprehensive study of service complaints over a period of approximately three years has indicated to us that somewhere in the neighborhood of 90% of all complaints regarding the functioning of commercial equipment is due largely to either improper application of the equipment; or improper installation of equipment that has been properly specified.

In this discussion we will deal particularly with the methods and practices of installation, assuming that the equipment has been properly applied to the job. There are a few essential considerations which the installation man should check before starting the actual installation of the equipment.

SIX MAIN STEPS

1. It is advisable for the installation man to be sure that all necessary material is on hand and readily available.
2. The installation man should assure himself that the installation as proposed conforms entirely with any existing local code. This will save endless litigation with the authorities in any locality and will eliminate a considerable additional expense in the event codes are not complied with.
3. Immediately upon arrival of the material where the installation is to be made, the installation man should make a thorough check to be sure that the current characteristics on the name plate of the condensing unit correspond with the type of current available at the location. He should also ascertain as to whether or not the feed line of the power supply and the nearest transformer have sufficient capacity to deliver current to the condensing unit without excessive voltage drop at any time.
4. It is especially important that the installation man be provided with all necessary tools for making an in-

stallation in conformity with the recommendations of the condensing unit manufacturer. In the case of Westinghouse commercial refrigeration equipment, the only special tools necessary in addition to those ordinarily carried by an installation or service man are an electrical test starting outfit for checking motors and a combination vacuum and air pump for dehydration and evacuation of systems.

5. The installation man should have a thorough knowledge of the procedure recommended by the manufacturer and be in a position to follow this procedure throughout in order to obtain the best results.

6. The cooling medium is very often overlooked by the application man and may be overlooked by the installation man unless his attention is directed to that very point. If water is to be the cooling medium then the installation man should assure himself that there is an ample supply of water and that the water is of sufficient purity to avoid clogging of strainers and condensers. If air is to be the cooling medium, then there must be definite assurance that there will always be an ample supply of cool, clean air over the condenser. Dusty or otherwise dirty air will, of course, restrict the passage of air through the condenser and reduce the capacity considerably.

Auxiliary Equipment

1. Oil Separators.

Whenever "Freon" is used as a refrigerant in an evaporator of the "flooded" or "semi-flooded" type, it is necessary to use an oil separator in the discharge line from the compressor to the condenser so that the oil may be separated from the discharge gas and returned to the crankcase of the compressor rather than be allowed to get into the evaporator where it will lodge.

The use of an oil separator avoids robbing the compressor of oil, with consequent possible damage to the compressor's moving parts and also tends to maintain the capacity of the evaporator by keeping oil out of the evaporator.

2. Auxiliary Liquid Receivers.

In the event the evaporator of the flooded or semi-flooded type will require refrigerant in excess of the capacity of the liquid receiver on the condensing unit; it will be necessary to install in the liquid line adjacent to the condensing unit an approved auxiliary liquid receiver.

Purpose of the auxiliary liquid receiver is to prevent overcharging the liquid receiver and condenser of the condensing unit with consequent high head pressures and possible damage to the condensing unit and loss of refrigeration.

Although Westinghouse commercial refrigeration equipment of the hermetic type is protected against damage to the compressor by means of an electro-pneumatic unloader valve, the fact remains that in the event an expansion valve should stick for any reason, the receiver and condenser will fill to the point where no

condensation is possible in the condenser and therefore refrigeration will be retarded if not entirely stopped.

3. Liquid Line Sight Gauges.

Especially with "Freon" refrigerant, we have found it highly essential to employ the use of a liquid line sight gauge or liquid line indicator to determine whether or not a condensing unit has an ample charge of refrigerant.

There are several manufacturers of refrigeration parts and accessories who have on the market today suitable liquid line sight gauges or liquid line indicators at nominal cost. The use of a liquid line sight gauge eliminates all guess work with reference to the amount of refrigerant in a given system.

Installation Procedure

Westinghouse has come to depend more and more upon a combination of cleaning, dehydration, and evacuation operations on evaporative coils, refrigerant control devices, and connecting tubing. This operation prohibits the use of the compressor on the condensing unit being used as an evacuating agent for the evaporative coils and connecting tubing.

For this particular operation or combination of operations, we have provided for our distributors a special combination air and vacuum pump at a nominal cost to encourage distributors in following our recommendations to the letter. The small amount of additional time involved in following this procedure is regarded as inexpensive insurance against future service expense. Our distributors support us most enthusiastically, because they realize that the small additional expense involved pays definite dividends in better customer relations and reduced service expense.

astically, because they realize that the small additional expense involved pays definite dividends in better customer relations and reduced service expense.

Pressure Test

After the evaporators and unit have been located in their respective places, the tubing should be connected up without having expansion valves and other control devices in the line; with the unit service valves closed; and a pressure test imposed on the system by means of dry air supplied by the combination vacuum and air pump.

We have found it advisable to employ this pressure test on the majority of installations to determine if there are any bad leaks where refrigerant could escape into the surrounding atmosphere.

In the event the equipment was located in a restricted space, the escape of refrigerant would so contaminate the surrounding air that it would be almost impossible to employ a Halide torch to test for small leaks.

By the use of dry air and soap lather for a pressure test of approximately 180 lbs. we have found that it is possible to eliminate at least the more serious leaks before refrigerant is introduced into the system.

After the pressure test has been completed and any necessary repairs to the system have been accomplished, it is then recommended that the expansion valve and other control devices be installed in the system and the dehydration and evacuation of the system completed.

(A followup to this article by Mr. Licence will describe the Westinghouse method of dehydrating units.)

1938 Chicago Permits on All Systems Total 4,345

CHICAGO—Permits for the installation of 4,345 new refrigerating systems were issued during 1938 by the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels, and Cooling Plants.

Inspections of 31,877 boilers, vessels, and cooling plants were made during the year. Repairs were ordered on 3,643 refrigerating systems, and on 3,425 boilers and tanks.

Safety record for the year was good, the department reported, with accidents being negligible and the only fatalities being the result of non-compliance with orders of the department.

New One-Gallon Freezer Has Two-Way Use

BELOIT, Wis.—The "Freeze-Master," a complete self-contained ice cream freezer, has been introduced by Taylor Freezer Corp. as the newest addition to the company's line.

The new unit is a one-gallon freezer that will turn out from five to seven gallons an hour of ice cream or frozen malted milk. It is equipped with an automatic control that is said to keep ice cream or frozen malted always ready for immediate serving direct from the unit.

There is a refrigerated compartment for storing mix. Dimensions of the unit are: length, 27 inches; depth, 23 inches; height, 57 inches. A self-contained, 1/2-hp. compressor provides the freezing.

PERFECT SERVICE

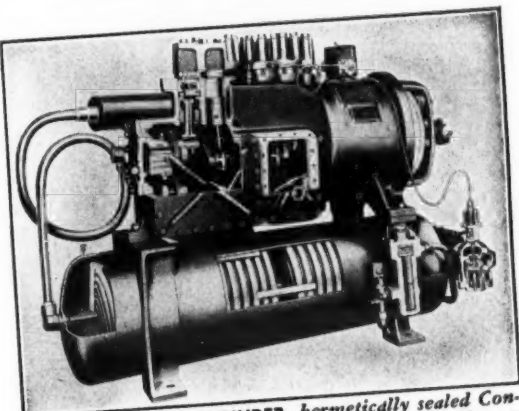
FROM THEM ALL

THE WELL-KNOWN REFRIGERATING UNITS on this page represent several types of designs.

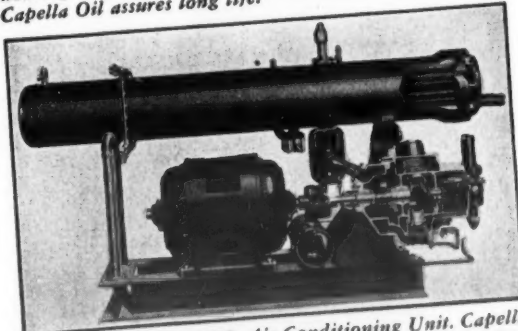
But no matter which design or refrigerant you may be using, Texaco Capella Oil assures efficient lubrication.

Fact is, all the units shown here are lubricated with Texaco Capella Oils with entire satisfaction. Trained lubrication engineers will help you select the correct grade of Texaco Capella Oil for your need. 2186 warehouses assure prompt deliveries. To order, phone the nearest, or write:

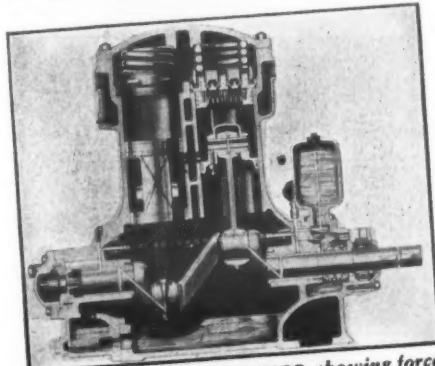
The Texas Company, 135 East 42nd Street, New York City.



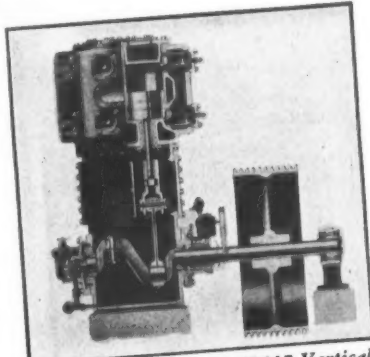
WESTINGHOUSE 6-CYLINDER hermetically sealed Condensing Unit. Full pressure lubrication with Texaco Capella Oil assures long life.



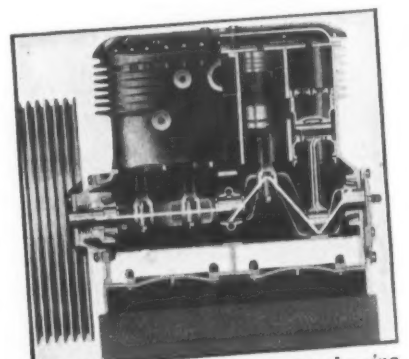
AIRTEMP 7-CYLINDER Air Conditioning Unit. Capella Oil under pressure provides trouble-free lubrication.



VILTER "FREON" COMPRESSOR showing force feed oiling system. Texaco Capella Oil gives top performance in these compressors.



WORTHINGTON-CARBONDALE Vertical, Double-acting enclosed crankcase Compressor. Pressure lubrication and Texaco Capella Oil . . . double assurance for continuous operation.



BAKER "FREON" COMPRESSOR showing crankcase oil-level, path of oil and roller bearings. Texaco Capella Oil keeps Baker Machines at their best.

Texaco Dealers invite you to tune in The Texaco Star Theatre—a full hour of all-star entertainment—Every Wednesday Night—Columbia Network—7:00 E.S.T., 8:00 C.S.T., 7:00 M.S.T., 6:00 P.S.T.



TEXACO Capella Oils

FOR USE WITH ALL TYPES OF REFRIGERANTS

Specialty Selling Methods

Purpose of Kelvinator Salesmen's Institute Is To Prove Sales Ability Can Be Acquired

DETROIT—The "How, What, and Why" of Kelvinator's National Salesmen's Institute—why it was founded, how it will be operated, and what accomplishment is expected—are detailed in a plan book just issued by the company.

Convinced by its experience in last summer's National Salesmen's Crusade that the salesman is the "forgotten man" of U. S. business, the institute is designed to provide salesmen with the kind of assistance which will enable them to increase their earning power.

NOT 'PEP TALK,' BUT FACTS

"We felt that our job was not one of constantly urging our men to go out and work harder, and to put in more hours, but to so equip them for selling that the time they devoted to selling would produce more sales," the plan book explains.

Taking issue with the "law of averages" theory of calls and sales which sales managers constantly din into the ears of specialty salesmen as the one and only key to increased earnings, underlying theory of the institute is that "there is a definite relationship between calls and sales—but this relationship varies with every salesman."

"There is no such thing in the world as an 'average' salesman," the plan book states. "One salesman may make a sale for every six cold canvass calls. Another may make a sale for every 20 calls. Another may work all week, call on a hundred people, and not make a single sale."

A TRADE—NOT A KNACK

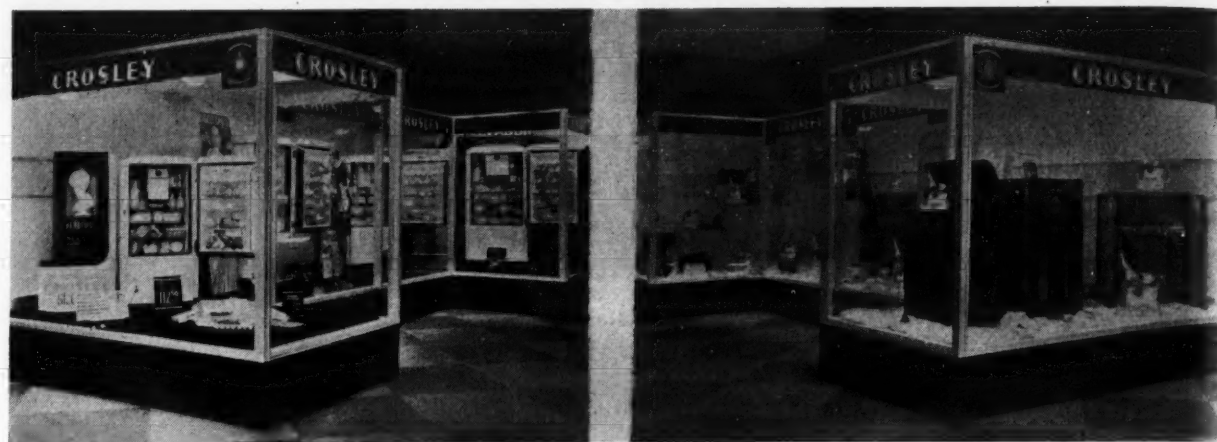
Difference in results, it continues, results from only one thing—the selling ability of the man himself. This ability is not a "gift" or a knack—it is a trade. It can be learned by any man who is willing to learn, and who can find someone to teach him.

This teaching job, the institute has been set up to do, by taking the instruction load off the shoulders of the already-too-busy wholesale man, furnishing tested materials, and maintaining personal contact between himself and the retail salesman.

In addition to Sidney Edlund as president, C. William Rados as manager, and Miles H. Dittmer, Thomas L. Craig, and R. A. Demmer as field staff members, an advisory council of 18 retail salesmen has been set up to assist in the direction of the sales-training program.

These 18 men, chosen in threes

Entrance To a 'Model' Appliance Store & Showroom



When Crosley distributors attended a convention at the factory last month, they were treated to the factory officials' idea of what a model appliance store should be like. Above are pictured the left and right-hand sides of the store's show windows and entrance as the distributors saw them.

from each of Kelvinator's six regions, will come to Detroit twice each year to study the training program and confer with institute heads regarding it. Basis of selection of these council members will be their sales records made in the "Pioneer Club," the company's organization for star salesmen.

Man chosen as president of the council will receive \$250, and the secretary and other 16 members will receive \$100. Both trips to Detroit will be all-expense affairs, in addition to the fees. Personnel of the council will change from year to year, as new men win places for themselves on the basis of outstanding sales performance.

Instruction will be by the "direct-route" method. The institute contacts the men directly, first mailing them

the study kit, containing full instructions, and the first lesson. This lesson is graded, and if the salesman passes, he gets lesson No. 2—and so on.

Sound and slide films will supplement lesson material, and these will be backed up by explanatory charts. Subjects to be taught will come under three main headings:

1. Selling Kelvinator household appliances.
2. Fundamentals of specialty selling.
3. Details and use of Kelvinator promotional campaigns.

Complete story on every Kelvinator campaign, written from the standpoint of "how the salesman can best cash in upon it," will go to every man enrolled in the institute. In this way, each man not only will know about each campaign, but also will know how to use it for his own advantage.

Upon completion of the course, the salesman will be awarded a diploma, certifying that he has carried through a program of education designed to make him master of his job. The diploma will be signed by the institute's manager and president.

18 Retail Salesmen Get Advisory Council Posts

(Concluded from Page 1, Column 4)

Raymond J. Black, G. S. Blodgett Co., Burlington, Vt.; F. P. McCarty, Rudge & Guenzel Co., Lincoln, Neb.; B. Simon, W. W. Short Co., Houston, Tex.; Joe Morris, Allen L. Berry Co., Los Angeles; B. L. Cole, Modern Utilities Co., Great Falls, Mont.; Frank W. Snyder, Duke Power Co., Winston-Salem, N. C.; Fred D. Myers, Myers Electric Co., West Palm Beach, Fla.; and John C. Boettger, Hess Brothers, Allentown, Pa.

Members of the advisory council are chosen on the basis of three from each Kelvinator region. They will meet twice a year in Detroit to examine the plans and courses of the Institute and make such suggestions and criticisms as will make its activities entirely practical from the standpoint of the salesmen in the field.

Red, Cream & Blue Used In Showroom Kitchen

FORT WAYNE, Ind.—A new idea in planned electric kitchens, incorporating vivid color and lighting effects, has been opened here by Schlatter Hardware Co.

Kitchen includes the latest in electrical kitchen appliances, and is equipped with Estate hot water heater and range. Sperton refrigerator and kitchen radio, and Magnalite kitchenware.

Cabinet is custom built, in white trimmed with chrome and red hardware. Cabinet interior is in canary yellow, with shelves of red. Linoleum is black, red, and cream. A blue ceiling completes the color scheme. Fluorescent-type lighting is used for illumination.

Unusable Trade-Ins Given To Charity

SHERMAN, Tex. — Old ranges which the local branch of Texas Power & Light Co. takes as trade-ins but does not want to handle are turned over to the United Charities, which frequently has been able to make good use of them.

Crosley Distributors See Company's Idea Of Model Store

CINCINNATI—A practical example of "how to sell" was added by Crosley Corp. to its array of "what to sell" shown to distributors at their recent national convention.

In addition to introducing a complete line of 1939 models, the company constructed a complete model appliance store, starting with modernistic show windows and going through with the display of the whole line of merchandise, to give distributors a practical example of the proper way to merchandise its products most effectively.

Distributors entered the model store through a spacious foyer between the plate glass windows which lined it on both sides. On the one side was featured a group of 1939 Sheldor electric refrigerators, and on the other side was shown a variety of radio and radio-phonograph combinations.

As they stepped into the store, distributors saw the complete radio and radio-phonograph line attractively displayed in the front and on the left of the store. On the right was the complete refrigerator line.

Just inside the store's entrance, a Crosley "Reado" was in operation. It was the first presentation of the new facsimile device to the Crosley organization. If distributor interest is an indication, the Reado promises to be a means of drawing customers to the store, as well as a sales item in itself.

To the rear of the radio-refrigerator display were the electric and gas ranges, electric and gasoline-engine operated washers, and electric ironers. Also in the rear was the store's office, neatly fenced off from the display area.

Conveniently situated at various locations in the store were modernistic settees, chairs, and tables for the convenience and comfort of prospects, so that they could be seated while the salesman demonstrated the appliance in which the customer was most interested.

Enhancing the appearance of the merchandise were attractive signs, displays, and counter cards, and bright illumination gave a prosperous, cheerful appearance to the whole store layout.

Consolidated Edison Co. Reports 'Bargain Package' Total of \$5,649,921

NEW YORK CITY—Electrical appliances valued at a total of \$5,649,921 were merchandised between Sept. 1 and the year-end through the "Jobs for Men—Edison's Bargain Package for You" campaign by Consolidated Edison Co., reports E. F. Jeffe, vice president in charge of sales.

A total of 230,609 packages were sold during that period, exceeding the sales quota by 55,609 and including 922,436 electrical appliances and a similar number of electric bulbs. More than 95% of the sales under the package plan were made on the instalment basis.

"Perhaps the best indication that we have succeeded," said Mr. Jeffe, "is contained in the number of similar campaigns which are being undertaken throughout the country by other utilities, department, and chain stores."



CONTROLS

"You will be happy to know that we sincerely believe our advertising in Air Conditioning & Refrigeration News has paid its way. . . . There is no question but that you have the outstanding refrigeration magazine in the industry."

— E. A. Vallee, Vice Pres., Automatic Products Co.

When an advertiser believes that his advertising has paid its way, he usually has reasons for arriving at that conclusion.

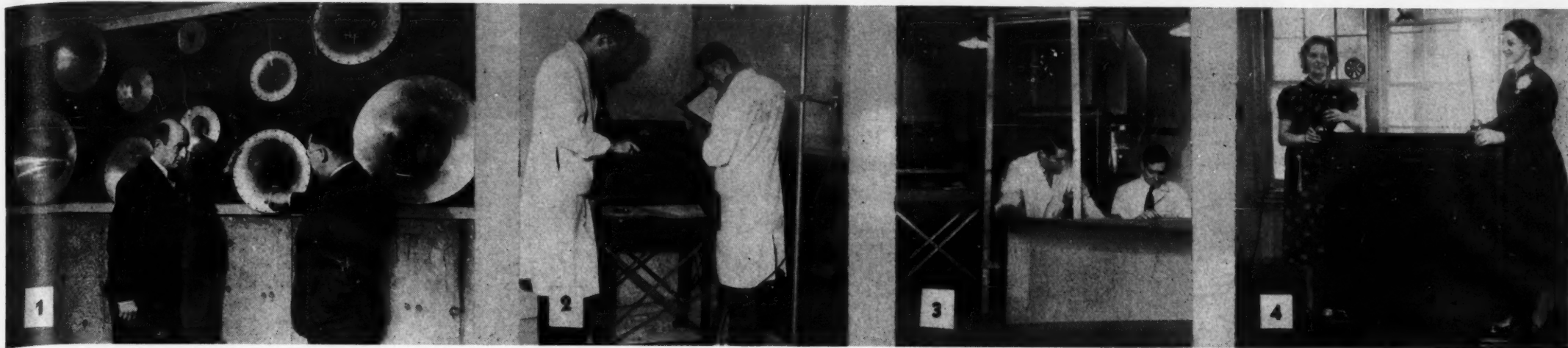
Inquiries, orders, new accounts, total sales volume, comment of customers, enthusiasm of the sales organization—any number of things—may indicate to the advertiser that his advertising is on the right track.

It is gratifying to Business News Publishing Co. to have so many good advertisers freely express their complimentary opinions of the effectiveness of their regular advertising schedules in THE NEWS.

THE NEWS reaches a responsive audience of active buyers all over the world.

Air Conditioning & Refrigeration News
"The Newspaper of the Industry"

Almost Any Type of Atmosphere or Sound Condition Can Be Obtained in G-E Laboratory



A room suspended from the building which harbors it—so quiet that listening hurts the ears—and another chamber in which "indoor weather" in many varieties and even "sunshine"

can be ordered up, are some of the features of the General Electric air-conditioning department laboratory in Bloomfield, N. J., viewed last week by trade publication editors.

(1) Elliott Harrington, commercial engineer, and H. D. Kesley, engineer, in plenum chamber. Orifices are used in measuring airflow. (2) Room-type conditioner being tested for quietness

in sound room. (3) Cardboard model under construction. (4) Room conditioner undergoing tests in all-weather laboratory. "Sun" radiation on window obtained with incandescent

lamps. Thermometers shown in the photograph indicate temperatures of the girls holding them rather than the temperature of the air in the room.

Air Conditioning

Oregon State College Plans Meeting on Air Conditioning

CORVALLIS, Ore.—The mechanical engineering department of Oregon State College will sponsor an air-conditioning conference here on March 23, 24, and 25. Speakers from as far east as St. Louis will take part in the conference, said to be the only one of its kind held on the Pacific Coast.

This year's conference is the outgrowth of a similar conclave held last year to determine whether or not heating contractors and men in the steamfitting, plumbing, building, and equipment industries were interested in a discussion of their problems. More than 200 met at Corvallis last year, and voted to make the conference an annual affair.

Brunner Units To Work In Big Fair Exhibits

UTICA, N. Y.—Four large Brunner refrigerating units will be installed in the United States Federal building, two in the Borden building, and one in the Distilled Spirits building at the New York World's Fair, officials of the Brunner Mfg. Co. announced recently.

In addition, Brunner fractional horsepower units will be used in connection with several ice cream cabinets and soda fountains which will be in operation in various parts of the fair.

New Illuminator Tubing Has Low Temperature

ST. CHARLES, Ill.—Production of a new fluorescent tubing for illumination and decorative purposes has been started by the St. Charles Technical Laboratories, Inc. here. It is available in 10 colors, from blue to daylight white.

Normal operating temperatures are but slightly higher than the human body, making the tubing of particular interest to the refrigeration and air-conditioning industry.

It is claimed that power consumption is about one-half of incandescent bulbs for an equal amount of light, and the daylight white is said to give practically no color distortion. Employing no filaments, the tubing is claimed to have a useful life of 25,000 hours.

English & Lauer To Handle Trane Line

LOS ANGELES—English & Lauer, Inc., 1978 S. Los Angeles St. here, has been appointed exclusive representative in southern California for the entire line of heating, cooling, and air-conditioning equipment manufactured by the Trane Co., La Crosse, Wis.

Wax Figures' Drooping Fixed By Air Cooling

BUFFALO—Cooling of store windows to keep wax figures from drooping was cited by William H. Price, Jr., vice president in charge of sales for Carrier Corp. and president of the Air Conditioning Manufacturers Association, as one instance of the way in which air conditioning has progressed beyond the needs of mere mortals, and in doing so has opened up infinite new sales possibilities for the salesman willing to inject a little creative thinking into his work.

Mr. Price made these observations recently before a meeting of the Air Conditioning Council of Western New York while speaking on "Crusading for Creativeness in Air-Conditioning Sales Work."

Bigelow Heads Dravo's Conditioner Division

PITTSBURGH—E. S. Bigelow, formerly air-conditioning manager of Trilling & Montague, Inc., Philadelphia, has been appointed manager of the Carrier division of Dravo Corp. here.

Mr. Bigelow has been active in the air-conditioning industry for many years, as a consulting engineer in Trenton, N. J. in 1922, as an associate of Nesbitt & Co., and later as vice president of the Buckeye Blower Co., Columbus, Ohio, prior to joining the Trilling & Montague organization in 1934.

Experience as a consulting engineer included work on the ventilation of telephone exchanges, and the application of air conditioning to product drying in the ceramic and rubber industries.

Present organization of the Carrier division of Dravo Corp. includes 50 men. Work has been divided by Mr. Bigelow into eight general sections, which are as follows:

1. Commercial air conditioning of stores, offices, shops;
2. commercial refrigeration;
3. package commercial refrigeration, water coolers, beverage coolers, etc.;
4. residential air conditioning in homes over \$35,000;
5. residential air conditioning in homes under \$35,000 (operated on a wholesale business through the existing sheet metal and dealer trades);
6. specialties: window ventilators, room coolers, self-contained store coolers;
7. process division, where emphasis is on products;
8. industrial air conditioning in factories where emphasis is on human comfort.

Pulver Distributes Airgard Products

PROVIDENCE, R. I.—E. Pulver Cook, Inc. has been appointed exclusive distributor for products of Airgard Mfg. Co. in Rhode Island, eastern Connecticut, and southeastern Massachusetts, announces R. L. Barker, Airgard's eastern manager.

Bryant Co. Consolidates Philadelphia Forces

PHILADELPHIA — Bryant Air Conditioning Corp., local distributor and installer of air-conditioning and gas heating equipment and rock wool insulating products, has moved its offices to 915 N. Front St.

Mr. Traugott explained that the move has been made in order to consolidate the firm's sales, warehousing, and contract departments.

General Electric Gets Dallas Hotel Job

DALLAS, Tex.—A \$60,000 air-conditioning unit will be installed in the White Plaza hotel by the Murray Co., distributors of General Electric air-conditioning equipment, according to Jack Chaney, vice president and treasurer of the hotel company. This equipment, which will serve the first and second floors and 150 guest rooms, is part of \$150,000 being spent to modernize the hotel.

Independent Air Filter To Quit Business

CHICAGO—Independent Air Filter Co. has decided to discontinue its business, company officials announced on Jan. 31. Affairs of the company are now in liquidation.

Adequate arrangements have been made to complete all outstanding orders and continue indefinitely all required service to customers having Independent equipment, it was said.

MORE THAN ONE MILLION DETROIT EXPANSION VALVES TO ONE CUSTOMER

One large manufacturer has just used over a million Detroit Expansion Valves—a record that could be built only on consistent satisfaction and one of which we are justly proud.



DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

Division of American Radiator & Standard Sanitary Corporation

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg

HOW DO YOU FEEL ABOUT



IT HAS NO PLACE IN THE LEONARD WAY OF DOING BUSINESS

*Leonard "puts on the pressure" where it counts
... on products and policies that create no cut-
throat competition and destructive practices.
That's why Leonard dealers stay in business
and keep on making money.*



SURE—high-pressure selling methods get "results!"

Orders come pouring in... sales curves go zooming up... everybody, from the salesmanager down to the delivery boy, gets excited.

It's a great party until the "shot in the arm" wears off. Then, it's tough.

For, sure as shooting, there's only one thing the "high-pressured" dealer can do—get out from under, by any method that presents itself... price-slashing, cut-throat competition. Then, both he and other dealers suffer.

★ ★ ★

Leonard distributors don't use "high-pressure selling." They make money without it, and so do Leonard dealers.

Leonard distributors believe in letting the dealer set the pace... *help* him grow, instead of forcing him.

Dealers *aren't* tacks on maps, but business men with a right to their independence.

Above all, Leonard gives every dealer territory to *grow into*.

Naturally, the Leonard Way of Doing Business has attracted distributors who are sound and amply financed... men who long ago learned that their growth depends upon the growth of their dealers.

They like this fair and square and *steady* way of doing business. They appreciate that it means reducing dealer mortality, and increasing sales from their outlets.

If this kind of a slate sounds good to you, look up the Leonard distributor nearest you and check this advertisement with a lot of personal experiences—dealer experiences.

And for proof of where Leonard *does* put the pressure—see the great Leonard line for 1939! At least, why not find out? LEONARD, 14250 Plymouth Rd., Detroit, Mich.

YOU BUY AS YOU SELL
IN THE

LEONARD WAY

OUT "HIGH PRESSURE"?



SEE IF YOU DON'T AGREE ABOUT LEONARD VALUES

Sum up all the points. The Glacier sealed unit, with a record for low-cost trouble-proof service that is, we believe, without parallel in the industry.

New Zero-Freezer—of stainless steel—which helps freeze cubes faster and also provides storage space for "fast-frozen" foods.

All trays in standard models furnished with time-saving "Ice-Popper" Cube Release.

The Master Dial with built in thermometer,

gives customer absolute control over temperature ... assures perfect service in hot weather ... cuts down electricity costs.

Extra-capacity dry storage vegetable bin which holds nearly two bushels.

The glass-covered "Meat File," and "Showcase Food File," for perfect food conditioning.

New 3-way Len-A-Latch.

...and a "supporting cast" of many other novel and salable features.

Leonard Travels in Good Company

Albany, N. Y.	E. S. & E. Co., Inc.
Altoona, Pa.	Electric Appliance Distributors
Amarillo, Tex.	Nunn Electric Co.
Atlanta, Ga.	Lamar-Rankin Co.
Binghamton, N. Y.	Morris Distributing Co.
Birmingham, Ala.	Magic City Appliance Co.
Boise, Idaho	Bertram Motor Supply Co.
Boston, Mass.	J. H. Burke Co.
Buffalo, N. Y.	Joseph Strauss Co.
Charleston, W. Va.	Eskew, Smith & Cannon
Charlotte, N. C.	Page-Williamson, Inc.
Chicago, Ill.	L. C. Wiswell Co.
Cincinnati, Ohio	Schuster Electric Co.
Cleveland, Ohio	Arnold Wholesale Corp.
Columbus, Ohio	Appliance Distributing Co.
Dallas, Texas	Peaslee-Gaulbert Corp.
Dayton, Ohio	York Supply Co.
Decatur, Ill.	Linn & Scruggs
Denver, Colo.	Hendrie & Bolthoff Co.
Des Moines, Iowa	A. A. Schneiderhahn Co.
Detroit, Mich.	Buhl Sons Co.
Dodge City, Kans.	Mullin Furniture Co.
Escanaba, Mich.	Delta Hardware Co.
Grand Rapids, Mich.	J. A. White Distributing Co.
Harrisburg, Pa.	Knerr, Inc.
Indianapolis, Ind.	United Distributing Co.
Kansas City, Mo.	Federal Distributing Co.
Knoxville, Tenn.	Maytag Appliance Co.
Los Angeles, Cal.	Graybar Electric Co.
Louisville, Ky.	Stratton-Terstegge Co.
Memphis, Tenn.	Harry T. Wilson Co.
Miami, Florida	Major Appliances, Inc.
Milwaukee, Wisc.	Taylor Electric Co.
Minneapolis, Minn.	Enger Supply Co.
Montgomery, Ala.	Mathews Furniture Co.
Nashville, Tenn.	McWhorter, Weaver Co.
Newark, N. J.	E. B. Latham Co.
Newburgh, N. Y.	Shapiro Sporting Goods Co.
New Haven, Conn.	H. M. Tower Corp.
New Orleans, La.	Radio Specialty Corp.
New York, N. Y.	E. B. Latham Co.
Omaha, Nebr.	Paramount Radio Shop, Inc.
Paducah, Ky.	Gleaves & Son
Peoria, Ill.	Cohen Furniture Co.
Philadelphia, Pa.	Motor Parts Co.
Phoenix, Ariz.	Graybar Electric Co.
Pittsburgh, Pa.	J. A. Williams Co.
Plattsburgh, N. Y.	A. H. Marshall Co.
Portland, Maine	Cressey & Allen
Portland, Ore.	Electrical Distributing, Inc.
Providence, R. I.	Ballou, Johnson & Nichols Co.
Richmond, Va.	Graybar Electric Co.
St. Louis, Mo.	Electric Lamp & Supply Co.
Salt Lake City, Utah	United Electric Supply Co.
San Francisco, Cal.	Graybar Electric Co.
Scranton, Pa.	Household Appliance Distributors
Seattle, Wash.	Seattle Hardware Co.
South Bend, Ind.	Cloud Bros.
Syracuse, N. Y.	Morris Distributing Co.
Toledo, Ohio	Electric Range & Equip. Co.
Trenton, N. J.	Adams Distributing Co.
Tulsa, Okla.	Otasco Supply Co.
Washington, D. C.	Southern Wholesalers, Inc.
Wichita, Kans.	McKelvey's
Williamson, W. Va.	Persinger Supply Co.

of Doing Business

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What's Wrong With Air Conditioning?

SPEAKING before an air conditioning and commercial refrigeration distributors' meeting in New York City, E. A. Terhune, eastern manager for Servel, made an indictment of the air-conditioning industry so sweeping that it merits attention and analysis. Said Mr. Terhune of air conditioning:

"The engineering is wrong.

"The prices are wrong.

"The merchandising is wrong."

Some will be quick to dismiss such a condemnation because it's so drastic. And, as William Henderson, executive secretary of the Air Conditioning Manufacturers Association, argues: "After all, air conditioning is only in its infancy, and is bound to make mistakes. Its years of existence are comparatively few, yet its sales totaled \$81,500,000 in 1937, and it has contributed immeasurably to a higher standard of living."

Widespread Dissatisfaction Among Dealers

Even so, one cannot discount the fact that there is widespread dissatisfaction and unrest today among air-conditioning dealers. And, for that matter, can one point to a single air-conditioning manufacturing organization that is satisfied with the volume of business it has obtained, or that can show a record of profits?

In every new industry, somebody has to pay the cost of pioneering. For electrical appliances, the utilities have frequently shouldered the burden. Some observers point out that they haven't done so in the case of air conditioning, although they have done much to encourage it (as a matter of fact, the utilities have quite a bill of complaints to register against the air-conditioning business). Certainly the public hasn't borne the cost of pioneering. In the case of air conditioning, manufacturers have poured money into it, and it has cost dealers plenty.

Let's consider Mr. Terhune's indictments item by item:

Engineering: Progress in the

design and engineering of air-conditioning equipment has been rapid and praiseworthy. From the beginning, air conditioning has been considered an engineering problem. Some critics will declare that this is one of the troubles with the industry—all the attention has been paid to engineering, and scarcely any to merchandising.

Are Installations Over-Engineered?

It has been an axiom of the industry that every air-conditioning installation must be a tailor-made job. This has kept prices high, has stunted distribution, and has made customers uncomfortable from coast-to-coast. Careful engineering, of course, is of paramount importance; but some critics are making the point that producing "laboratory conditions" on every installation has been an expensive fetish.

At the last national meeting of the American Society of Refrigeration Engineers in New York City, and at the Chicago Symposium on Air Conditioning, speaker after speaker made the point that air-conditioning installations have been "over engineered." Air conditions have been calculated to a fine scientific point, rather than to a more modest approximation of human comfort. This not only cost money, but made customers "too aware" of air conditioning. Willis Carrier himself, the father of the industry, is making this point strongly in current addresses.

Too High for Consumer, Too Low for Dealer

Prices: In this category "all is confusion." On the one hand we hear that the prices quoted frighten the prospect. On the other it is said that nobody is making any money in air conditioning, and that loss selling has forced too many dealers to the wall. Quotations made by competitors on an installation sometimes differ radically, thus inducing the prospect to lose confidence in the whole idea.

Some observers place the blame for the difficult price situation on high local installation costs, largely caused by union labor domination. They point out that heating and ventilating contractors, through whom a considerable portion of air-conditioning installations are sold, have strong union connections and sympathies—many of them having started out as union men, some still holding cards. Hence they allowed unions to step in and gain control, with resulting high costs, jurisdictional fights, and resistance to prefabrication.

The construction unions are notorious for their excessive hourly rates and their expensive red tape (even President Roosevelt has remarked on this), and the construction unions—steam-fitters, sheet metal workers, and electricians—seem to have air conditioning pretty well under control in a number of cities.

Those who hold this view believe that the best method of reducing prices to the consumer and raising margins for the dealer at the same time is that of putting more installation into the product. Prefabrication, packaging—putting mass production to work at lowering costs—should not only take the heel of the unions off the neck of the air-conditioning industry, but should open the door to aggressive merchandisers.

They'll Do It Every Time . . .

By Jimmy Hatlo



Too Many Manufacturers, Too Few Dealers

Merchandising: Like the Roumanian army, everybody seems to be an officer, with no soldiers for the firing line. Too many manufacturers, not enough dealers. One reason for this situation is the alarm felt by makers of heating equipment, practically all of whom have at least added the name of air conditioning to their business. It's hard to find a furnace manufacturer today; they're all "air-conditioning" manufacturers.

Naturally, manufacturers with a large investment in the production of radiators and other older types of equipment weren't going to let the market fall into other hands, if they could prevent it. Hence came the spectacle of dozens of producers all trying to get a toe-hold in the business, all trying to take the few available prospects away from competitors, all making "sample" installations at a considerable loss. The net result of so many efforts to keep somebody else from getting the business has been a pronounced barrier to the development of any business at all.

Thus there has been an outrageous turnover in dealerships, a complete absence of operating profits, an inability on the part of individual manufacturers to secure the economies of quantity production, and a general tendency on the part of the public to wait "until the prices come down."

Air Conditioning Calls For Specialized Dealer

Attempts to utilize existing lines of distribution haven't proved satisfactory so far. As Joe Donovan, manager of General Electric's air-conditioning department, puts it: "They're either all back and no front, or all front and no back." By which he means that the good merchandisers aren't sufficiently equipped technically to handle installation, and the good installers aren't good merchandisers.

Gradually, as the few air-conditioning dealers who have done a real job (and there are some) are spotted, it is becoming known that being a successful air-conditioning dealer is a specialized job, requiring a new and individual type of operation.

Merchandising Programs Can Be Developed

Selling air conditioning poses new problems just as air-conditioning engineering and installation have done. These merchandising problems have been widely neglected. Dealers have sold on price because they didn't know—or hadn't been taught—any other way to sell. Consequently only a few scattered dealerships seem to have figured it out and weathered the storm.

High Public Acceptance, But Poor Dealer Acceptance

Throughout the "trade," air conditioning has a bad odor. Misled by public acceptance of the idea, the education of dealers has been largely neglected by manufacturers. And hundreds of good merchandising organizations—of sound financial position, good judges of credit, and with the money to hire the necessary engineering talent—have stayed out of the business and "let somebody else take the rap."

Air conditioning fulfills a real human need. Its engineering has progressed by leaps and bounds. Packaging of equipment has been carried far. What it lacks most—and you can get agreement on this from anyone in the industry—is a body of good dealers who can sell it.

To obtain such dealers, the industry has a real selling job on its hands. They should be shown how far the packaging idea has progressed. They should be freed as far as possible from union domination. They should be presented with tested promotion and selling programs, developed from the experience of the industry's few successful dealers. And above all, they should be convinced that engineering and production facilities have really progressed to a point where the industry can "go to town" as soon as it has enlisted an aggressive field selling organization.

Considerable Progress Possible in 1939

In this connection, it should be noted that the indictments of the industry made in the forepart of this editorial are analyses of past performances. Many of them

arose from conditions beyond the control of the industry. Their substance is known all too well by manufacturers and utilities, as well as by dealers. And there is evidence that some thinking and planning has been done toward correcting some of the situations which have existed.

But until this thought and planning is made known to dealers, and sold to them, not only by precept but by practice, field representatives out trying to line up dealers will no doubt continue to run into high sales resistance. When the right kind of merchandising organizations become convinced that air conditioning is ready for them, that their interests are going to be protected, then the wheels of mass production and promotion can start rolling, the price situation should be healthier, and the incompetents of the business will be left by the wayside.

LETTERS

Present Status of The Grunow Company

Mason City Refrigeration Co.
620 South Federal Ave.
Mason City, Iowa

Editor:

Can you tell us for sure whether they are manufacturing the Grunow household refrigerator this year?

H. A. WARD

Answer: We have not as yet heard one way or another as to whether the General Household Utilities Co. will manufacture a Grunow refrigerator this year. For latest news about the company see story on page 1 of this issue.

The company has been endeavoring to complete financial arrangements whereby it can get back into production.

As soon as there is anything definite to report, AIR CONDITIONING & REFRIGERATION NEWS will, of course, publish the information in one of its weekly issues.

An Idea For Others Similarly Afflicted

404½ N. Center St.
Pottsville, Pa.

Sirs:

I am sending the name and address of a man who is very much interested in the AIR CONDITIONING & REFRIGERATION NEWS. At least I think so, he is always borrowing mine.

Kindly send him an application for a subscription.

JOHN J. SISK

Last Two Weeks of January Mark Sales Record For Carrier

SYRACUSE, N. Y.—Air-conditioning equipment sold by Carrier Corp. during the last two weeks of January, amounting to 3,500 tons of refrigeration capacity, represented the largest volume of equipment sold by the company in any half-month since 1937. J. I. Lyle, president, announced here last week.

Speaking before a meeting of district managers, Mr. Lyle asserted that the report was "not only encouraging to Carrier, but to the whole air-conditioning industry, as it reflected an upturn in heavy goods industries."

"It is encouraging to note this increase came from sources which to a large extent have been out of the air-conditioning market since the abrupt business break in the fall of 1937. These are large office buildings, department stores, and process industries."

The meeting was presided over by E. T. Murphy, recently appointed vice president in charge of marketing.

Baumgardner Trustee Sees Dividend Delay

TOLEDO—Creditors of the Baumgardner Distributing Co., bankrupt, have been notified by Louis A. Schrader, attorney for the trustee in bankruptcy, that while a further dividend will be paid in this case, it will probably be some time before this can be done.

The trustee at the present time is making collections on the accounts receivable, Mr. Schrader reports, and since a considerable amount remains to be collected, the length of time the estate will be held open will depend upon the success the trustee has in his collection work.

In any event, it is unlikely that creditors will receive a further dividend within three to four months, Mr. Schrader states. A first partial dividend of 20% was paid creditors on Oct. 1, 1938.

Dube Joins Engineering Department of Alco

ST. LOUIS—John E. Dube, formerly with Fulton Sylphon Co., Knoxville, Tenn., has joined the engineering department of Alco Valve Co. to direct its new development program.

For the past five years, Mr. Dube has been in charge of the design and development work at Fulton Sylphon's headquarters in Knoxville.

PAR CONDENSING UNITS
28 MODELS
1-4 TO 20 H. P.
WRITE FOR FREE CATALOG
MODERN EQUIPMENT CORP.
DEFIANCE, OHIO, U. S. A.

You Can Install
SPORLAN VALVES
THERMOSTATIC EXPANSION
with Confidence!

FOR SEAL REPAIRS
CHICAGO SEAL CO.
CHICAGO SEAL CO.
111 CLINTON ST.—CHICAGO, ILL.

President



A. B. SCHELLENBERG

Schellenberg Elected To Alco Presidency

(Concluded from Page 1, Column 3) after its founding, and worked first in the engineering department and later in the sales department.

At that time, Alco manufactured a constant-pressure expansion valve, a thermo expansion valve for ammonia only, and several magnetic valves. These early thermo valves were elaborate and expensive devices which included a gauge, a charging valve, and a large remote bulb section which became part of the suction line. Valves were charged on the job with some of the refrigerant in the system.

The company now has a complete line of expansion valves for low-pressure refrigerants as well as ammonia, float switches, float valves, multi-outlet valves, and magnetic valves.

In 1932, Mr. Schellenberg was made manager of Alco's New York City office, and continued in that capacity until January, 1937, when he returned to St. Louis as sales manager. During the past two years he has been closely associated with the management details of the company.

He is a member of American Society of Refrigerating Engineers, vice president of the St. Louis section, and author of a chapter on automatic control in a recent issue of the A.S.R.E. Data Book. He authored the first textbook on the Automatic Control of Refrigeration, published in 1932, and has written other articles on the same subject.

Since assuming Alco's sales managership, Mr. Schellenberg has lectured on refrigerant control in more than 50 U. S. and Canadian cities, addressing meetings of the A.S.R.E., Service Engineers' Society, Practical Refrigerating Engineers, several Food Preservation Conferences, and classes of many engineering schools.

During these lectures, he has popularized the now well-known Alco "glass evaporator."

Grunow Stock Trading Suspended In Chicago

(Concluded from Page 1, Column 4) mittee stated, "it was concluded that the public interest would be served best by suspending the common stock of the company from trading on the exchange at this time."

According to its report, General Household Utilities ceased manufacturing operations in October, 1937, and has never resumed them. Reports have been that the company was negotiating to sell its Marion, Ind. plant, and use the funds to reorganize its financial structure so as to resume production.

A.S.R.E. Spring Meeting Will Be Held In Hershey, Pa.; Food Conference Is Scheduled For Texas U.

NEW YORK CITY—Spring activities of the American Society of Refrigerating Engineers will be capped this year by the Third Food Preservation Conference, which will be held April 13 and 14 at the University of Texas, Austin, Tex., and by the society's Twenty-Sixth Spring Meeting, to be held May 21, 22, and 23 at Hotel Hershey, Hershey, Pa.

Sponsored by the University of Texas, with the cooperation of the American Society of Refrigerating Engineers, the A. & M. Engineering College of Texas, and the Southwestern Ice Manufacturers Association, the food conference will be chairmanned by Byron Short, professor of mechanical engineering at the University of Texas.

"Food Technology" will be the topic of the conference's lead-off session, scheduled to start at 10 o'clock on the morning of April 13. Program for this session will include the following addresses:

"Vitamins in Frozen Foods," Dr. Jet Winters, department of home economics, University of Texas; "Bacteria and Enzymes," Prof. J. Q. Sealey, department of biology, Texas Technical College; "Preparation of Frozen and Refrigerated Foods," Miss Jennie Wilmut, home economics department, University of Texas; "Practical Aspects of Food Technology," Roy W. Snyder, agricultural extension division, Texas A. & M. College.

Refrigerated locker storage plants will be dealt with in the three papers scheduled to be delivered at the conference's second session. Titles of these papers are "Locker Plant Practice in the Southwest," "Design of Locker Plants," and "Operation of Storage Plants," this last paper to be read by P. T. Montfort, agricultural engineering department, Texas A. & M.

A third session, scheduled for the evening of the first day, will feature a speech on "Ice Melting and Freezing Rates," by A. H. Willis, research assistant to Prof. Short, chairman of the conference, and will include other papers by members of the Southwestern Ice Manufacturers Association.

Starting off the second day will be a session on "Quick Freezing," with papers on "Agricultural Operations Affected by Packing Methods," and "Quality Control in Frozen Food Production." Dr. J. G. Woodroof, Georgia experiment station, Experiment, Ga., will conclude this session with a paper on "Freezing Media for the Immersion Method of Freezing."

Fifth and final session will be on "Transportation of Foods," and will include the following papers: "Review of Transportation Methods," Dean W. R. Woolrich, college of engineering, University of Texas, and member of the conference committee; "Railway Problems in Moving Frozen Foods"; and "Improved Methods of Design of Refrigerator Cars."

Advance registration, committee meetings, a preliminary golf match, and an informal party at the hotel are tentatively scheduled to start off the spring meeting of the A.S.R.E. on Sunday, May 21, at Hershey.

The meeting's first technical session on the following morning will be devoted to commercial refrigeration, with papers scheduled on "Portable Testing Apparatus for Condensing Units," "The Performance of Small Refrigerating Machines," and "Commercial Absorption Machines."

An informal conference on transportation will be held that afternoon, featured by a paper on "Truck Bodies for Ice Cream," the report of the A.S.R.E. committee on truck bodies, and discussion of railway car progress and portable precoolers.

Appropriately enough, inasmuch as Hershey, Pa. is best known as the home of Hershey chocolate, a paper on "Conditioning in the Chocolate Industry" will keynote the air-conditioning session on the morning of the final day. Other papers scheduled for this session are on "Air Conditioning Storage," "The Operation of the Government Conditioning Plant," and "Bus Conditioning."

The A.S.R.E. Council luncheon will follow this session, and there will be a conference on pipe and piping in the afternoon. The customary A.S.R.E. dinner dance also will be a part of the program.

Inspection trips to the plants of Hershey Chocolate Co., and to its air-conditioned, windowless office building and its ice skating rink have been planned. There also will be the usual quota of sporting events and other recreational opportunities.

Reprint of an advertisement in Electric Refrigeration News, 1932

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Jobber Activities

Holcombe Tells of Parts Jobbers' Progress, And of Things Which Now Need To Be Done

Editor's Note: The following was the keynote speech at the recent annual convention of the National Refrigeration Supply Jobbers Association. It gives a picture of the nature of the parts jobbing business and some of the problems that arise, and the part that the association has played.

By A. H. Holcombe, Jr., Victor Sales Corp., Philadelphia

"Are we on the right track?" is the topic that has been assigned to me. Before we have a track someone must think of the need of one, where to start and where to go.

Our first official meeting was called by Joe Oberc during the 1935 R.S.E.S. convention. Most of the time was taken in attempting to classify the term jobber, still one of our major problems. The definition adopted was as follows:

1. A jobber is a person or company, who purchases (refrigeration) merchandise from at least five (5) manufacturers and resells same to service men, distributors, dealers, or the trade.

2. No jobber shall operate a service shop or organization, except for the trade, and no jobber shall do retail work.

EARLY OBJECTIVES

It was decided to allow those who were either in the service or retail sales business, as well as the parts jobbing business, the period of a year to get out of one or the other but they were to be taken in as members tentatively if they wished to join the association. The specific objectives of the meeting were:

(a) To persuade manufacturers not to sell the trade direct where they have a jobber connection.

(b) To eliminate competition by small manufacturers selling as jobbers and by factory representatives in established jobber's territory.

(c) To urge manufacturers to set jobbers up on maximum discount basis regardless of quantity.

(d) To urge that no master jobbing set-up be made to cover national distribution of manufacturer's products to be resold to the local jobber.

Our temporary chairman, H. S. McCloud of Pittsburgh, was elected president, and Joe Oberc as secretary. We all owe both of them and the officers and directors and Frank Gleason, our first executive secretary, our appreciation for piloting the organization through its first and hardest year.

During the year which intervened between Detroit and Memphis, Tenn., there was much discussion by letter and in committee on both quantity and price schedules, particularly on belts, tubing, refrigerants, valves, etc. Many new jobbers were set up by the manufacturers after approval of our members through Executive Secretary Gleason.

DEFINING A JOBBER

Memphis, November, 1936—Many of us remember the heated arguments in Memphis while revising our definition of the term "jobber." There were a number of specific instances where the definition had to be further detailed. The membership requirements were tightened by insisting that a wholesale jobber carry nine definite lines of merchandise.

It was decided that a number of firms who continued in either service business or retail sales would have to be dropped from the jobbers association. The specific objectives of the meeting may be outlined as follows:

a. To strive for acceptance by manufacturers of our revised definition.

b. To win the adherence of manufacturers to a policy based on the method of distribution expressed in that definition.

c. To obtain more favorable terms from manufacturers on unprofitable but necessary stock items.

d. To otherwise cooperate with the manufacturers.

MANUFACTURERS COMMITTEE

Much credit is due our manufacturer's committee at the convention. They were meeting almost continually with the jobbers committee of the manufacturers.

A little over a year ago we had our third convention in Chicago during November, 1937. Much good was done by the exchange of ideas between jobbers from the various sections of the country both in meeting and while visiting outside of the meetings.

At the first session a talk similar to this one was given by one of our first members, H. W. Small of St. Paul, Minn. His topic was "Membership Qualifications—Are We Headed in the Right Direction?" In this talk he referred to the progress we have made in defining our membership requirements and made the following interesting statements.

SMALL'S 'FOOD FOR THOUGHT'

"You will find that in addition to the jobbing of refrigeration supplies our members are active as: Ice machine distributors; refrigerator distributors; service organizations; manufacturers; manufacturers' agents, etc.

"I was then asked a question which gave me food for thought; 'Why do you disapprove of an ice machine distributor jobbing supplies, when supply jobbers are distributing ice machines?' Gentlemen—I'll bite! Why do we?"

"The time has come for us to take a definite track. When that main track has been selected, neither compromise nor expediency should permit the opening of the switch. We should use great care in charting our future course, keeping in mind the harmony that is essential between ourselves and the other branches of the industry. When the other groups have indicated their approval of our course, we should ask and expect to receive their full cooperation.

"Should individuals decline proper cooperation, it should be the duty of each one of us to impress upon such individuals the necessity of coopera-

tion so long as they are members of the group.

"Since the beginning of our organization we have had the pleasure and benefit of the close cooperation of the manufacturers association. This was made possible because their definition of a jobber conformed to ours in every respect. Any alteration of the present qualification requirements should be made with that in mind."

After much discussion there was again a revision of membership requirements. It appeared that some of the manufacturers are definitely sold on jobber representation while others do not allow sufficient profit for us to push their products. Finally there was a lengthy discussion of cooperative catalog purchases.

REASON FOR CATALOG

Most of us agree that some sort of a catalog is essential. It has been found that mail order catalogs sent into small towns bring in business year after year without any personal calls. Wide distribution of catalogs brings in business even after the prices in them are out of date. Sears-Roebuck and Montgomery Ward have made every one interested in catalogs and they also have taught the American people to order by mail. The specific objectives which we reached at Chicago might be summarized as follows:

1. To develop an even better and clearer definition of a jobber. There is, however, still room for improvement and the committee this year should bring definite suggestions for further improvement.

2. To strive for an acceptance of that definition by more of the supply manufacturers. Otherwise there is a tendency for the manufacturers to seek more outlets than can consistently sell and profit in the handling of their products.

3. To cooperate more fully with the manufacturers whose problems are very similar to ours. There is not enough business to set up a jobber in each area to represent each manufacturer and that is the reason they have agents or representatives in almost all sections.

4. To check up and visit if possible new jobbers. It is up to us to help them. They will gradually take over our former customers in their territories. We cannot stop them from starting up. It is a sign of progress.

REGIONAL GROUPS

5. To get ourselves better organized next year. To issue a regular monthly bulletin and each of us furnish something for it to help the others. Special bulletins should be sent out from time to time. Continue the organization of local and regional jobber groups. Talk up our jobbers association to the legitimate jobbers who do not belong. Many of them do not understand our purpose and from the first will be suspicious of our desire to cooperate.

6. Give the maximum amount of desirable publicity to the trade on our activities.

7. To put on the best possible annual meeting at the end of the year.

During the year that has intervened the refrigeration business as a whole has suffered quite a reduction in volume, particularly the manufacturers of refrigerator boxes, commercial units, air-conditioning systems, etc. Some of us have been seriously affected by this but there are others whose profits and volume of business are greater than 1937. Let us look into a few of the methods of improving our business. We will consider it from three angles.

First our store, second our office, and last our relationship to others which means both our customers and

those who supply us with material.

Every store reflects its owner whether it is Marshall Field, John Wanamaker, or F. W. Woolworth. If I should speak of the stores with the red fronts every one of you would immediately say A. & P. I read recently that this color was selected as a mark of distinction by the founder, George Hartford.

Our stores should be definitely distinctive. They should be kept clean and properly arranged to display as many lines of merchandise as possible. Every one of us has carried items for months that our customers did not know we had or forgot that we had advised them that we were carrying. We must display as much as possible. There is a limit to this of course as it would be foolish to display each and every size flare nut, union, etc. If you allow dust or cobwebs to accumulate, your customers will get the impression that the place is either dead or dying.

We should provide ample stock for our customers. This requires careful planning as all of us want to buy at the lowest possible price, but with so many competing lines and different sizes it requires careful study to know how many and what to order. Perhaps you can borrow once in a while if you are friendly with your competitor, as he may have an overstock of the item you need badly.

COMPETING LINES

I mentioned above competing lines. We are soon going to have to decide how many it is profitable to stock and sell successfully. We can sell three to six lines of expansion valves or controls, but we certainly cannot sell that number of lines of coils, tubing, or dryers. The fact that it can be done does not prove it is advisable or profitable to carry that many lines.

This discussion could be continued indefinitely as the stock you should carry varies with the locality, volume of business, your customers' demands, and many other factors. It is only brought up because of the fact that more and more manufacturers each year are seeking an outlet in the areas we serve.

Our future depends on what we decide now. Let us apply common sense in making our decisions. Common sense you know is careful observation of facts and truthful deduction from those facts.

HANDLING RECORDS

The second factor is our offices and by that I mean the handling of records. The filing and recording of transactions must be carefully done. It is essential that we carefully watch our overhead. It is better to have to work a little harder during the peak months than it is to hire additional inexperienced or inefficient help.

You will find that as your volume of business increases your overhead will increase rapidly. For every so many employees, you will require one whose time is taken up almost entirely with supervising their activities and this affects overhead. It is impossible to direct many salesmen as well as direct the business without help. We must develop a personnel to assist in the management of the business as it grows.

All of us have had the experience of trying to find someone like this. Either they understand refrigeration and nothing about business management or they are good salesmen and do not understand that it does not pay to spend \$5.00 too often to get \$1.00 profit. Some of us are good merchandisers, others good salesmen, others good refrigerating engineers or keen buyers and so forth, but it is a rare individual who combines in a fairly good proportion most of these. Few of us are willing to admit our weaknesses but try to cover it up year in and year out at considerable cost to ourselves. Don't be penny wise and pound foolish.

CUSTOMER RELATIONS

The third factor is our relationship to our customers and those who supply us with material. We certainly should not compete with our customers. Many of us advertise as being 100% wholesale. Personally I see no objection to selling belts, gas, thermostats, etc., at list prices, which would be at least double the price the service man pays us for the same material.

We should never solicit this business, but as we have a store which is open to the general public we should not refuse to sell them when

they frequently come miles to buy from us. We can contribute rather liberally to service men's organizations, banquets, entertainments, etc., using some of this extra profit for that purpose. We can improve our methods of helping the service men. We can educate them to buy a little more than just hand to mouth as they so frequently do.

AID THE MAKERS

We can all learn to cooperate with the manufacturers' representatives. Remember they are the manufacturers themselves, to us except at a convention like this and on rare visits to their factories. These agents realize that their success depends on the business placed in their territories. You are one of their best customers and you have access to many that they cannot reach.

They in turn can throw business your way and that is another reason why we will have to eliminate some of the competing lines that we handle. The competition between manufacturers for our business is just as keen as the competition between all the jobbers in a given city or area.

FORGET COMPETITORS

Above all do not worry too much about your legitimate competitor. I am very much afraid that many of us do just this thing rather than putting our efforts into serving our trade better. For example, there was a time that Philadelphia served Baltimore, Md.; Lancaster, Harrisburg, Scranton, Allentown, Pa.; Trenton and Atlantic City, N. J. We had customers in all of these cities but now there are one or more jobbers in each of them. Some of these customers we can hold but you can't expect a service man to send 20, 50, or 100 miles for a few fittings, a belt, or a different expansion valve than the one he has.

We will have to make it up by developing new business near at home. We have all had the experience of having our salesmen tell us that so and so is quoting low prices to such and such a customer. Investigation usually proves that it is not true but only a trick of the buyer to get lower prices from our men. Close cooperation in the form of regional groups will avoid many misunderstandings.

VOLUME GROWS

Our total volume of business has grown each year, which is contrary to the general trend of the refrigeration industry during this same period. I have not been asked to answer the question: "Are we on the right track?" That is for each of you to determine after you have heard the reports of our officers and committees during our sessions this week. These will be discussed from the floor together with other subjects that may be brought up.

Here are a few questions which it seems to me we should answer in this convention:

How can we improve our present definition of a refrigeration supply jobber?

Will it be acceptable to the manufacturers of the supplies and parts we sell?

Will it fit in with their sales policies?

Are some of us still dabbling with service or retail sales? (Some of the letters I received for this talk say we are.)

How can we work better with the manufacturers' agents?

How can we get the manufacturers to work more closely with us on such items as replacement expansion valve policies and prices, arranging for a profit on tinny tubing extras, cut out the sale of valves, controls, etc., to small case manufacturers, etc.? If we are to cooperate with them they should be willing to help us on some of our difficulties.

What of our requirements for membership?

How do they fit the requirements that should be set up for membership in local jobber associations?

Are we giving sufficient service to our own members?

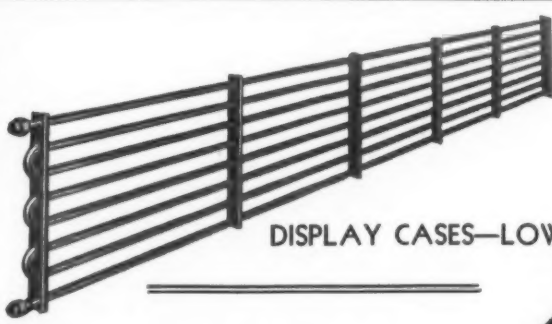
How can we secure additional members from those who duly qualify but do not belong at present?

What is keeping them from joining?

What additional activities can our central office provide for us?

What is the ultimate destination to which our track is leading?

What truly big job should our organization do for us?




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A type of valve mechanism for producing similar effects by the use of two bellows is seen in Fig. 7, along with the small diagram in the upper right-hand corner of this figure



Below the ice maker is an insu-

Fig. 9 is a diagrammatic view showing the hook-up of the system. High pressure liquid from the condenser (89) passes through the tube (91) to the heat exchange coil and thence through tube (93) to the expansion valve (94) and the low pressure liquid passes through tube (95) to the sharp freezer (54), leaving the freezer through tube (96) to flow through one side of the ice-maker evaporator (62) to suction tube (69) or (70), it being (70) in this case, due to the position of the rocker valve (76) which is shown in position to let the refrigerant vapor pass from suction tube (70) to the main suction tube (71).

(Concluded on Page 23, Column 1)



Commercial Service

1936 Liquid Carbonic Soda Fountain Described To Aid Service Men

Editor's Note: Yearly models of soda fountains, like household refrigerators and automobiles, generally involve changes in construction, appearance, and operating and control systems. Messrs. Black and Seitz are describing various models produced by Liquid Carbonic. In this article they discuss the 1936 model.

This is a continuation of the weekly series of articles in the NEWS on servicing soda fountains, ice cream cabinets, and counter-type freezers.

By Arch Black and Dean C. Seitz

Type of soda fountain introduced by Liquid Carbonic in 1936 is shown in detail in Fig. 1. This type of refrigeration hook-up and construction has remained active up to the present time. All of the major parts and many of the minor ones are designated by part numbers in the caption under Fig. 1.

Fundamentally the refrigeration hook-up incorporates the combination of both the flooded and the direct expansion refrigeration systems. Frigidaire expansion valves and control valves are supplied by the manufacturer as standard equipment. All models are fitted with evaporators and control valves for Freon-12 refrigerant as standard.

Fig. 2 illustrates diagrammatically the refrigeration hook-up together with the electric wiring diagram. The refrigeration system can be split into two circuits: (1), the ice cream refrigeration circuit; and (2), the water cooling and jar enclosure circuit. Both of these circuits are connected to a common $\frac{5}{8}$ -inch suction line and $\frac{3}{4}$ -inch liquid line.

ICE CREAM SECTION

The ice cream section is refrigerated by means of a standard flooded boiler which is submerged in a 50-50 alcohol-water solution contained in the brine tank. Different temperatures are automatically maintained in the various sleeves of the brine tank by means of the stub-brine tank construction which is illustrated by point No. 17 in Fig. 1. This boiler is connected directly to the condensing unit as shown in Fig. 2.

Temperature of the alcohol-water brine solution is controlled by means of type YD Frigidaire thermostatic switch (Part No. 1122047). The bulb of this thermostat is placed in the well located directly under the valves at the brine tank boiler, as shown in Fig. 2. When the bulb is in place, the well should be filled with oil and sealed with a thick cork or stopper.

This thermostatic switch is supplied as standard equipment with each soda fountain shipped from the factory. A 12-foot capillary line connects the switch and the thermostatic bulb. At the time of installation, it is necessary for the installer to select a suitable location for the thermostatic switch, and place the bulb in position. The switch may be installed underneath the drain board or in the basement.

The installer must likewise furnish and install a $\frac{1}{4}$ -inch copper line between the switch and the compressor head, as shown in Fig. 2. The switch should be adjusted to cutout when the brine solution is brought down to approximately -3 to -5° F.

The proper size of the overload heating element should have been supplied with the switch by the manufacturer. If not shipped with the fountain, it is advisable to contact the nearest representative of the soda fountain manufacturer and call this matter to his attention.

Both the water cooling compartment and the syrup jar enclosure are refrigerated by means of a continuous direct expansion evaporator. A thermostatic expansion valve (indicated by the lower valve, point No. 28, Fig. 1) is located in the dry storage compartment which is directly in front of the water bath. This expansion valve controls the amount of liquid refrigerant entering the continuous expansion evaporator which consists of two distinct sections.

The first section consists of a hairpin loop of $\frac{3}{8}$ -inch copper tubing which runs through the entire length of the syrup jar enclosure. One leg of the loop is in the water bath found on the bottom of the jar enclosure and the other leg is against the back wall of the enclosure, not immersed in the water. In series with the jar enclosure expansion coil is the water bath expansion coil. This evaporator is installed on both sides of the water bath, as illustrated in Fig. 3.

ICE REGULATION

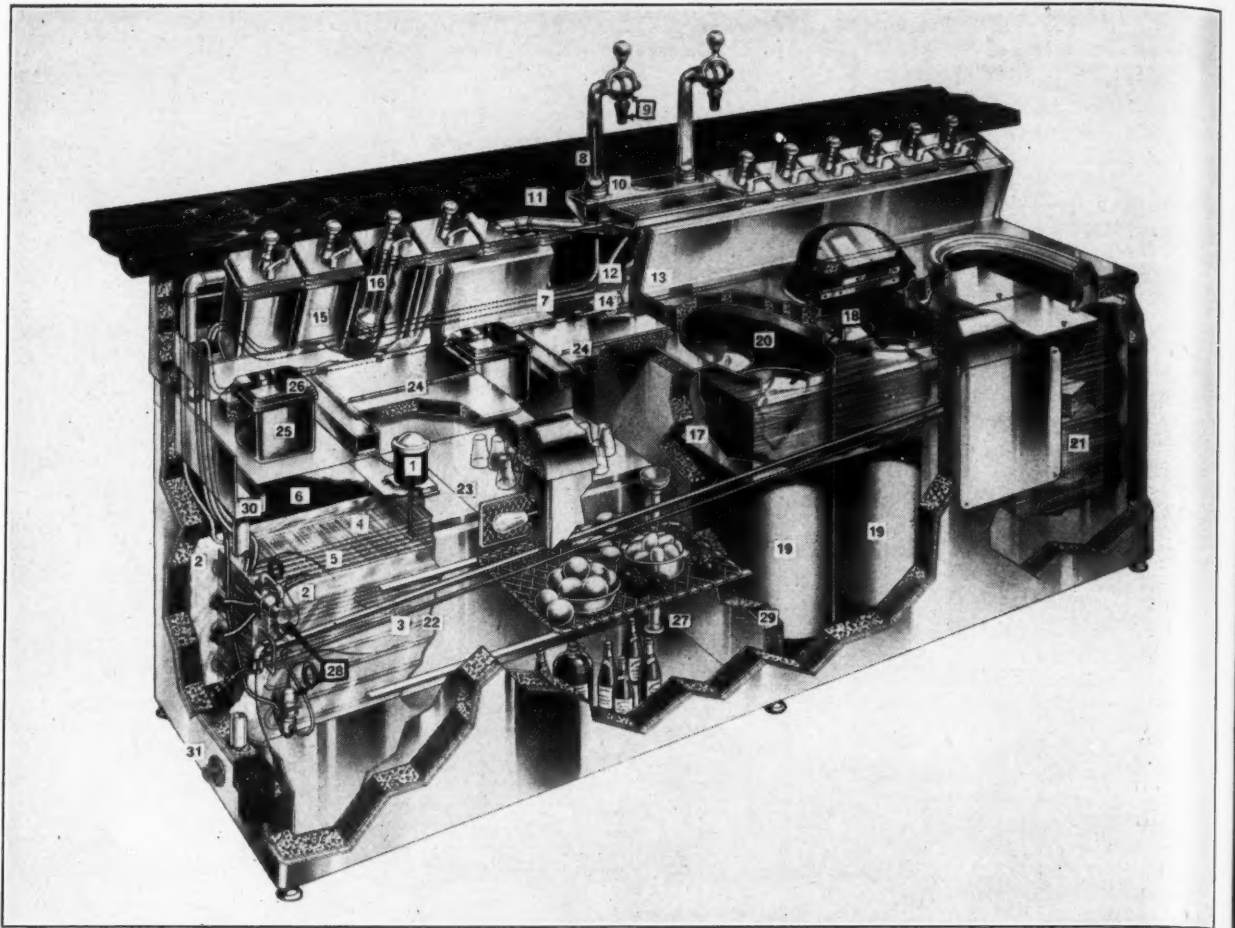
The ice formation on the water bath expansion coil is regulated by a temperature regulating valve (model TRV-20). The bulb of the temperature regulating valve is placed approximately 1 inch from the expansion evaporator. In no case should the bulb be located more than $1\frac{1}{2}$ inches from the coil.

The valve should be so adjusted that the indicator is set on the $2\frac{1}{4}$ mark of the figures at the bottom of the valve. To adjust the valve, slide down the rubber ring which covers the adjusting nut, and then turn the adjusting nut by means of a suitable tool inserted in the hole.

This valve was illustrated in Fig. 3 in the Jan. 4 issue.

The x mark on the pin will move downward for more ice, upward for less ice, as indicated on the name plate. After the valve has been adjusted, the rubber ring should be pushed up over the adjusting nut to prevent moisture from entering the interior mechanism.

Fig 1—'Phantom' View of 1936 Liquid Carbonic Soda Fountain



Principal features and operating mechanisms of the soda fountain which Liquid Carbonic produced in 1936 are shown in this "phantom" photograph. Parts of the fountain may be identified by referring to the following key:

1. Motor-driven agitator; 2. Water bath ice formation; 3. Control bulbs of thermostatic expansion valve and temperature regulating valve; 4. Water bath; 5. Water-cooling coils; 6. Water bath compartment lining; 7. Water and soda leader lines; 8. Draft arm; 9. Draft arm head and

nozzle; 10. Draft station; 11. Drain line; 12. Jar enclosure water bath; 13. Jar enclosure expansion coil; 14. Jar enclosure ice formation; 15. Syrup jar; 16. Syrup pump; 17. Steel-brine tanks; 18. Ice cream cans; 19. Ice cream sleeves; 20. Inside of ice cream sleeves.

21. Brick ice cream compartment; 22. Bottle storage partition; 23. Shelf over water bath; 24. Piano hinge; 25. Crushed fruit jars; 26. Jar cover; 27. Drain; 28. Water bath refrigeration valves; 29. Insulated partition; 30. Drain trough; 31. Drain outlet.

The thermostatic expansion valve (model TEV-21) should be so adjusted that equal thickness of ice will form on the $\frac{3}{8}$ -inch expansion coil located in the jar enclosure. After the jar enclosure coil has been completely refrigerated, liquid refrigerant will then enter the water bath expansion coil and will produce ice first on the rear coil and then on the front coil. The front coil has three loops on the top which act as a drier. The bulb of the thermostatic expansion valve is clamped against the expansion coil at the entrance to this drier coil.

If a large amount of ice forms on the $\frac{3}{8}$ -inch coil in the syrup jar enclosure and at the same time very little ice freezes on the water bath expansion coil, it is a definite indication that the valve is set for a too high superheat. In this case the expansion valve should be turned down (clockwise) so that the liquid refrigerant may flow into the water bath expansion coils.

The most satisfactory operating pressure for the expansion coil is approximately 16 to 18 lbs. This setting can most easily be obtained by screwing the adjusting nut on the expansion valve in (clockwise) as far as it will go, and then backing it out (counter-clockwise) $1\frac{1}{2}$ revolutions. At this point the superheat setting will be approximately correct.

As illustrated by Fig. 3 the water bath is equipped with a small electric motor agitator. The motor is controlled by a thermostatic switch installed on the end of the creamer unit. The thermostatic bulb of this switch is clamped to the city water coil inlet at a point under the level of the water in the bath.

It is very important that the bulb

be under the water level, for the proper performance of this motor circulator depends upon its proper installation. If the water level is low and the bulb is exposed above the water level, or if the water bath is warm, the bulb will then cause the switch to make contact, and thereby keep the motor running continuously. On the other hand, if cold water is entering the coil or if the bulb is placed in an especially cold location, the switch will then remain open and the motor will not run.

The motor agitator switch is set at the factory to make contact at

41° F. and to break contact at 37° F. This is the factory recommended setting, and is so marked by means of a notch. Both the temperature and the differential of the switch are adjustable. The temperature may be changed by turning the knurled knob clockwise for a higher temperature as indicated by the arrow. The differential may be changed by screwing the small adjusting screw found on the opposite side of the switch case. Turning this adjusting screw clockwise will decrease the differential.

For proper operation the motor agitator switch should make contact when water is drawn from the draught arm at the end of the first or second glass, and it should continue to run until the bulb has again been cooled to the temperature for which it was adjusted. When large amounts of water are drawn and the bath becomes warm, the motor will run continuously until the bath has been reduced to the proper temperature.

To stop the motor manually, pull out the knob at the top of the switch box. To start the motor, press down on the knob. Pressing the knob down will not always start the motor. It merely engages the automatic action of the circulating system. Actually the starting and stopping of the motor is performed by the bulb which is fastened to the inlet water coil.

The switch of the motor circulator is equipped with an overload protection located at the junction box at the terminal where the service wires are connected. If there is a short in the wire leading from the switch to the motor, it may cause the overload protection for the motor to act as a fuse and burn out.

If it is necessary to remove the overload protection coil in order to replace it with a new one, the procedure is as follows: Unscrew the terminal over the white porcelain connection, then remove the small

(Concluded on Page 19, Column 1)

Water Bath Cooler



Fig. 3—Water bath and evaporator. Note the motor-operated agitator.

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The Standard of the
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Operation of Water Bath Motor Agitator and Control Described

(Concluded from Page 18, Column 5) screw between the two terminals that fasten the thin wire of the overload protection to its terminal by means of a tweezer or a small pair of pliers. At this point the porcelain plug which has the overload protection wire embedded in it can be pulled out and replaced with a new one which must be obtained from the fountain manufacturer.

If a temporary overload has caused the overload protection to throw out the agitator motor switch, the knob at the top will snap out showing a red signal. This knob should then be pushed down so that the red is inserted. This again engages the overload and the switch is ready to continue its service. If within a few minutes it snaps out again, it will then be necessary for the service engineer to look for the cause of the overload.

SERVICING THE MOTOR

To remove the cover of the interior mechanism of the motor agitator switch, press down lightly on the bottom of the upper cover and slide upward. The overload ratchet can then be seen at the right-hand rear. All of the parts subject to corrosion are made of stainless steel.

If the motor has caused the overload to kick out because of sticky bearings, remove the wire which is connected to the top of the switch, then lift out the motor, and remove the two small screws that cover the oil holes at the bearings end. Then pour in light oil and work the shaft manually until it is loose. Continue to oil the bearings and run the motor until they have cleaned themselves.

Most frequently the cause of motor burn-out is connecting them to improper voltage at the time of installation. Direct current motors or brush type motors will require attention every six months. The brushes should be examined and if found short or worn down, should be replaced with new ones. If this is not done regularly, the spring behind the brush will act as a brush on the commutator ruining the armature in a short time.

CONTROL OF UNIT

As illustrated in the wiring diagram (Fig. 2) the condensing unit operation is controlled by means of two type YD switches. The electrical hook-up of these switches is exactly the same as that described in the previous information on the 1935 Liquid Carbonic hook-up. The low-pressure switch ("E" of Fig. 2) is supplied with the condensing unit. It should be set to cut-in at 28 to 30 lbs. and to cut-out between 8 and 16 lbs. This setting will start the condensing unit when ice is required on the water bath.

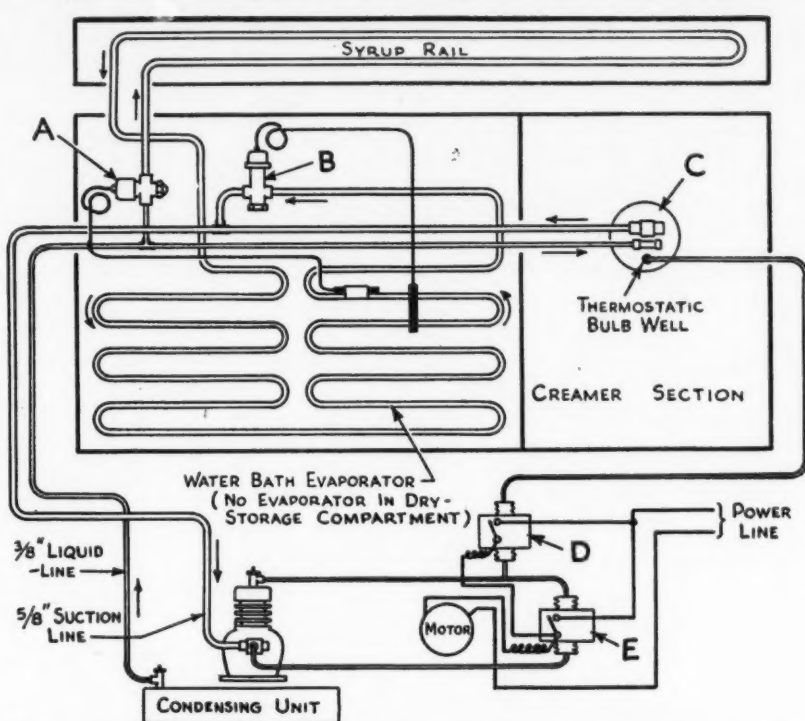
The temperature regulating valve ("B" in Fig. 2) will close when sufficient ice is built on the coil. After the temperature regulating valve closes the condensing unit will continue to operate until the cut-out point of the low-pressure switch has been reached.

Since the thermostatic switch ("D" of Fig. 2) is wired in parallel with the low-pressure switch, either of these may start the condensing unit, but both switches must be open before the condensing unit will stop.

OPERATION OF CONTROLS

If the ice cream section does not need refrigeration, then the setting of the low-pressure switch (8 to 16 lbs. cut-out) will stop the condensing unit. If on the other hand, the condensing unit is started by means of the low-pressure switch cutting-in

Fig. 2—Diagram of 1936 Soda Fountain



The refrigeration hook-up and the electric wiring system of the 1936 Liquid Carbonic fountain are shown in this diagram.

because of a lack of ice formation, then the condensing unit will only be stopped if the thermostatic switch "D" does not make contact before the low-pressure switch "E" breaks the circuit.

Both condensing unit switches are equipped with overload protections which must be wired in series (as shown in Fig. 4 of the Feb. 1 article).

It is necessary to connect the high pressure cut-out connector on the switch to the high pressure side of the condensing unit, since either switch can operate the condensing unit independently. The high pressure cut-out point of each switch must be adjusted to the same point.

When installing the condensing unit, it is necessary to add 2 lbs. of refrigerant (Freon-12) to the condensing unit for each water bath compartment contained in the creamer unit, and 1/2 lb. of refrigerant for each 10 feet of 3/8-inch liquid line and 1/10 lb. of oil for each pound of refrigerant added. The liquid line should never be smaller than 3/8 inch and the suction line never smaller than 1/2 inch.

Uniflow Beer Dispenser Combines 3 Facilities

ERIE, Pa.—Facilities for storage, cooling, and dispensing of draught beer are combined into a single unit set into a bar in the latest model of Uniflow Mfg. Co.'s line of Koldraft beer dispensing equipment.

Temperature and pressure controls of this unit can be readily adjusted by the bartender. Beer is drawn direct through circulating ice water without the use of coils or tanks.

The company reports that orders booked for the first 10 days of this year more than tripled those for the entire month of January, 1938.

New Manifold & Tube Bender Announced by Imperial

CHICAGO—A new manifold made of copper pipe and having leads for either flare or solder connections and a tube bender designed to handle 1/2, 3/4, and 1-inch tubing have been introduced to the trade by Imperial Brass Mfg. Co.

The new manifold is made to be attached directly to a line valve. Although it comes in 4-foot lengths, it can be cut so that the desired number of outlets are provided.

Rapid Cooling Features Coltrol Dry Cooler

CHICAGO—A new dry type beverage cooler combining cold control and foam control features with rapid cooling in a single unit has been introduced by Commercial Coil & Refrigeration Co.

Unit, known as "Coltrol D-X," employs what is said to be a new principle in liquid cooling, in which the refrigerant contacts the beverage coils directly to give a rapid cooling action with a minimum temperature lag. Refrigerant contacts the coils in a counterflow manner, entering at the top and flowing down over the beverage coils, while the beverage enters at the bottom and flows up. This action is said to result in gradual cooling, with no chilling of the beverage from the time it enters until it leaves.

New cooler is not a flooded type, and the dry action permits the oil to return to the compressor without an oil separator. This is accomplished by use of a suction tube placed at the bottom of the unit. Beverage to be cooled actuates a liquid control valve to open and flow refrigerant from the top of the cooler over the beverage coils. Refrigerant is converted here into a gas, causing an increased pressure in the refrigerant and beverage coil chambers.

The increased pressure causes the suction pressure valve to the compressor line to open until the liquid control valve closes, and the gas pressure within the cooler drops to shut the suction pressure valve to the compressor. Gas leaves the cooler through a tube at the bottom, which is connected to the suction pressure valve.

It is said that heat loss is greatly diminished by use of this system, due to the small temperature difference between the gas chamber and the atmosphere. Another advantage claimed is that the compressor is not taxed during idle periods to maintain the large temperature difference which might exist in another type of unit.

Cooler is designed for use with sulphur dioxide, methyl chloride, or "Freon," and is furnished complete with liquid control and suction pressure valves, flared fittings, and beer and water coupling nuts, ready for installation.

Constructed so that there are no inside joints, seams, or moving parts, the cooler may be cleaned with either chemicals or steam, it is said.

New Dryer Developed By Ansul Is Introduced In McIntire Line

NEWARK, N. J.—"MIC," a new drying agent developed by Ansul Chemical Co., is being introduced by McIntire Connector Co. in many of its large line of "DFN" driers.

A somewhat grayish-white substance in granular form, about the size of grains of rice, the new substance is said to be different in action than other driers, in that instead of simply absorbing moisture from the refrigerant, it actually imprisons the moisture by chemically changing it into a transparent, glass-like coating over each grain of the drying agent.

Moisture is no longer in the form of water or liquid, it is said, but in the form of a solid shell surrounding each grain of "MIC." Thus the flowing water is changed to an immobile dry solid, which does not pass into the system to cause harm.

The new drier may be used for any refrigerant, where emergency calls for quick work, and is claimed to be especially suitable where a high degree of dryness is sought. In tests, as low as .002% has been obtained, it is claimed.

Special effectiveness is claimed for the substance in application to sulphur dioxide units. It is said to be so powerful that it will break down sulphurous acid, imprison the moisture, and free the pure SO₂ gas when installed ahead of the compressor at the end of the suction line. It is designed for temporary installation, and it is recommended that it be removed from the system after a week or two, since it will accomplish its work in two or three days' actual running time.

In sulphur dioxide jobs, particularly the older commercial and ice cream installations, where the presence of carbon is frequently encountered, it is recommended that "MIC" be used in connection with a filter cartridge placed on the inlet of the drier shell.

On SO₂ jobs, best results are secured with the drying agent when installed in the suction line, as close to the compressor as possible. For "Freon" and methyl chloride systems, suction line installation also is recommended, but satisfactory results may be obtained from liquid line application, if this is desired, it is claimed.

New Friez Thermostat Line Uses 'Hydraulic Action,' Eliminates Relays

BALTIMORE—"Hydraulic action" is a feature of the new line of high voltage room thermostats, oven controls, and space thermostats recently announced by Julien P. Friez & Sons here.

Solid liquid charges, from which all gases have been excluded, actuate switch contacts in a manner which permits use of the controls on 25 ampere, 120-volt circuits without relays.

A variety of types are available, covering usual heating and air-conditioning applications. Special bulletins issued by the company describe the new controls.

Clean-Cutting Tool For Small Stock Marketed By Billings & Spencer

HARTFORD, Conn.—A new tool for cutting drill rod, wire, or bar stock up to 1/4-inch in diameter has been put on the market by Billings & Spencer Co., manufacturer of drop forged tools, forging machinery, and commercial forgings.

This tool is claimed to cut cleanly, leaving no burr, and without distorting the severed ends of the stock. It can be permanently secured to a workbench or can quickly be set up in a vise. It is designed to utilize directly the leverage applied.

Drop forged, carefully machined, and properly heat treated, the new Billings cut-off tool measures 15 1/4 inches in length and 3/4 inch in diameter. It is finished in a gray "Duro" finish with bright red end. Cut-off cam and block are finished in natural rust-proof finish. List price is \$3.75.

Tagliabue Issues Catalogue On Dial Thermometers

BROOKLYN—Another catalog and price list for the Tag line of dial-indicating thermometers has been issued by C. J. Tagliabue Mfg. Co., instrument manufacturer here.

This publication, identified as No. 1170, illustrates, describes, and gives specifications and net prices of the thermometers and such component parts as connecting tubes, dials, sockets, and bulbs.

WHAT IS Common Sense ABOUT VALVES AND MOISTURE?

It's common sense to face the facts about this clogged-valve problem. Fact One is: Every dealer has to service clogged valves. Fact Two: Even though mechanisms are most carefully baked and assembled, enough moisture to cause trouble remains trapped in the intricate passages of a certain percentage of units. Fact Three: Mrs. Unmechanical Owner unjustly blames dealer or maker or both when the valves clog.

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Air Conditioning

Text of Proposed Air-Conditioning Code For Detroit; Present Draft Of Ordinance May Be Revised

Because municipal codes governing the installation of air-conditioning equipment is a vital industry problem, the "Proposed Air Conditioning Code" of the City of Detroit is printed in full in this issue.

This proposed code is entirely different from the proposed "Refrigeration Code" for Detroit, printed in the Sept. 7, 1938 issue of AIR CONDITIONING & REFRIGERATION NEWS. The "Refrigeration Code" was concerned for the most part with the refrigeration cycle, while the "Air Conditioning Code" in this issue covers methods of sheet metal construction, grilles, air intakes, fans, filters, fire prevention, and uses of certain materials in winter, summer, and all-year-around air-conditioning systems.

A third code, proposed for governing the operation of refrigeration systems and licensing of operators and engineers, appeared in the Oct. 19, 1938 issue.

The following is a "Tentative Draft of the Proposed Air Conditioning Code" of the city of Detroit and which will become an Amendment to the Present Building Code of the city when passed by the Common Council.

The proposed code has been issued by George F. Emery, chief inspector of the Department of Buildings and Safety Engineering, who claims that it is the most complete code of its

kind ever attempted by a major city.

The "Proposed Air Conditioning Code" will be subject to revision after Mr. Emery has had an opportunity to discuss its provisions with all interested groups and organizations.

An ORDINANCE to amend Ordinance 354-C regulating all matters concerning or pertaining to the construction, alteration and maintenance of all buildings and other structures

including signs, fences, walls, dykes, towers, tanks, tents, bins, wharves, and docks, and similar objects; defining the powers and duties of the Department of Buildings and Safety Engineering in relation to the construction, alteration and maintenance of buildings and other structures; providing a penalty for the violation thereof and repealing all former ordinances conflicting herewith.

IT IS HEREBY ORDAINED
BY THE PEOPLE OF
THE CITY OF DETROIT

Section 1

That Section 2222 of Ordinance 354-C entitled "An Ordinance regulating all matters concerning or pertaining to the construction, alteration and maintenance of all buildings and other structures including signs, fences, walls, dykes, towers, tanks, tents, bins, wharves, and docks, and similar objects; defining the powers and duties of the Department of Buildings and Safety Engineering in relation to the construction, alteration and maintenance of buildings and other structures; providing a penalty for the violation thereof and repealing all former ordinances conflicting herewith," be and the same is hereby repealed.

Section 2

That Ordinance 354-C entitled "An Ordinance regulating all matters concerning or pertaining to the construction, alteration and maintenance of all buildings and other structures including signs, fences, walls, dykes, towers, tanks, tents, bins, wharves, and docks, and similar objects; defining the powers and duties of the Department of Buildings and Safety Engineering in relation to the construction, alteration and maintenance of buildings and other structures; providing a penalty for the violation thereof and repealing all former ordinances conflicting herewith," be and the same is hereby amended by adding a new article, to be known as Article 29, comprising Sections 2901 and 2911 inclusive and reading as follows:

Article 29—Air Conditioning, Exhaust and Ventilating Systems

2901.1: *Scope.* The provisions of this article and its subdivisions shall be applicable in all respects to all air conditioning, ventilating, and exhaust systems in all buildings other than those of Class F, except where a specific exemption from this requirement is granted herein or where a particular requirement is specifically made applicable to only certain designated classes or types of buildings, kinds of installations, or situations. The provisions of this article shall apply to all new installations or air conditioning, ventilating, and exhaust systems, and to all new alterations and additions to such systems already in existence, but shall not otherwise apply to such systems already in existence except where specifically made applicable herein.

2901.2: *Class F Buildings.* The installation of air-conditioning systems in Class F buildings shall be governed by the provisions of Section 2207.6.

2902—Definitions

For the purpose of this Ordinance the following definitions shall determine the meaning and application of the words and phrases herein defined.

2902.1: *Air-Conditioning System* shall mean a duct system employing mechanical means for supplying, to the whole or any part of a building, re-circulated air, to which may be added fresh air, and which may be conditioned either by heating, cooling, cleaning, de-odorizing, humidifying, dehumidifying, placing in motion or a combination of these or any other treatments.

2902.2: *Approved* shall mean tested and listed, for the purpose required herein, by the Underwriters' Laboratories, Inc., or by such other testing laboratory as may be accepted by the Board of Rules, and bearing a label or certification of inspection and approval by that laboratory.

2902.3: *Blower* shall mean an assembly comprised of blades or runners and/or housings or casings which cause a motion of air when in operation.

2902.4: *Blower Shut Off* shall mean an approved manually reset heat actuated thermostatic device installed in the duct system and arranged to shut off the supply of power to the blower and to stop operation of same whenever the temperature of the air at the point of installation reaches a point not in excess of 150° F. This device to be non-adjustable above 150° F.

2902.5: *Direct Heater* shall mean a furnace or heating device installed in the duct system for conditioning purposes, whose heating effect on the air therein is supplied directly from combustion of fuel in the furnace.

2902.6: *Duct* shall mean a tube, conduit or space within a wall or

structure forming a passage or shaft for the movement or circulation of air.

2902.7: *Duct Insulation* shall mean a protection or encasing on the outside walls of ducts or plenum chamber to retain or control the temperatures therein or for any other purpose.

2902.8: *Duct Lining* shall mean a sound absorbing or insulating material placed on the interior of duct walls or plenum chamber.

2902.9: *Evaporator* shall mean a coil containing the refrigerant of a direct refrigerating system, installed in the duct system for conditioning purposes.

2902.10: *Exhaust Outlet* shall mean an opening on the exterior of a building to discharge air from an air conditioning or exhaust system.

2902.11: *Exhaust System* shall mean an air duct system for the removal of air by mechanical or natural means from the whole or any part of a building.

2902.12: *Filter* shall mean a device of porous nature or design through which air is passed for cleaning or removal of objectionable particles, or odors.

2902.13: *Fire Damper* shall mean an automatic fire-resistive barrier designed to prevent the passage of air, gases, smoke and to restrict the passage of fire through or along a duct or plenum chamber.

2902.14: *Fire Door* shall mean an approved automatic fire resistive barrier designed to prevent the passage of fire across or through a fire wall where such wall is pierced by a duct.

2902.15: *Inlet* shall mean an opening within the building connected to an exhaust or air-conditioning system to permit the return of air to be discharged or re-circulated.

2902.16: *Intake* shall mean an opening on the exterior of a building used for the admission of fresh air to an Air Conditioning or Ventilating System.

2902.17: *Limit Control* shall mean an approved heat actuated thermostatic device installed in the duct system and arranged to shut off the supply of fuel to the furnace, or in the case of a hand fired coal furnace to shut the draft and open the damper when the temperature of the air in the plenum chamber reaches a point not in excess of 200° F. This device to be non-adjustable above 200° F.

2902.18: *Mechanical Means* shall mean the employing of a blower or fan of design and operation to force the air through an exhaust, ventilating or air-conditioning system.

2902.19: *Outlet* shall mean an opening within a building for the emission of air supplied by a ventilating or air-conditioning system.

2902.20: *Plenum Chamber* shall mean that part of a duct system in which an apparatus or device for conditioning air is installed.

2902.21: *Return Duct* shall mean a duct used for the removal of air from a room or space in a building in connection with an air-conditioning system.

2902.22: *Semi-Combustible Insulation* shall mean a material which may glow or burn in the presence of a flame, of sufficient intensity to cause ignition, applied for a period of five (5) minutes in still air, but in which all combustion, glow or smoldering ceases within one (1) minute of the removal of the applied flame.

2902.23: *Smoke Detector* shall mean an approved device or mechanism installed in the plenum chamber and which becomes automatically operative in the presence of smoke to stop the blower, close a fire damper across the supply duct end of the plenum chamber, and actuate an alarm signal.

2902.24: *Semi-Combustible Filter* shall mean a filter, which in itself, or by treatment, is sufficiently fire resistant so that fire spreading over the

filter, when loaded with dust and under operating conditions, will not be materially fed by the burning of the filter itself, nor cause the generation of objectionable quantities of smoke or toxic gases.

2902.25: *Supply Duct* shall mean a duct used for the transmission of conditioned or re-circulated air to a room or space in a building in connection with an air-conditioning system.

2902.26: *Ventilating System* shall mean an air duct system for supplying fresh air by mechanical or natural means to or for any space in a building whether or not such air may have been conditioned.

Section 2903—Construction Of Duct Systems

2903.1: *Materials.* Ducts shall be constructed of durable incombustible materials such as masonry, galvanized metal or other suitable rust resisting materials. Ducts may be of independent construction or may be built in to the walls or other parts of the building providing that the portions of the building forming the duct enclosure meet with the above requirements for duct construction.

No room, attic, concealed space, or other portions of a building shall be used as an integral part of the duct system unless the construction of the walls, floors and ceiling of such room or space conforms at least to all of the requirements for ducts. Construction consisting of not less than 3/4 inches of Portland or gypsum cement plaster on metal lath may be used for ducts. Ducts shall be constructed so as to provide structural strength and durability at least equivalent to galvanized sheet iron or steel of the thicknesses specified below.

Thickness of Metal For Air Ducts

Round Ducts, Diameter In Inches	Rectangular Ducts, Width In Inches	Minimum Thickness U. S. Gauge
6 to 10	up to 12	26
11 to 29	13 to 30	24
30 to 39	31 to 60	22
40 to 49	61 to 118	20
50 and above	119 and above	18

Ducts should be made reasonably tight throughout and have no openings other than those required for the proper operation and maintenance of the system.

2903.2: *Fabrication.* Metallic ductwork shall be fabricated with a Pittsburgh Lock on all seams, and all joints between sections shall be connected with "S" and drive cleats. Other methods or types of fabricating and connecting metallic ductwork except soldering or brazing may be used provided they will produce connections as tight and sound as those specified. Metallic ducts and fittings may have welded seams, provided straight ducts are welded at least every one and one-half (1 1/2) inches on center, and fittings every one (1") inch on center; and all overlaps so welded shall have at least a one-half (1/2) inch lap.

When "S" joints are used in fabricating ductwork in lieu of locked or welded seams, either in plenum, main trunk, branches or any ductwork, they must also be connected with a button punch, weld, screw, rivet or bolt at least every fifteen (15") inches on center, and the first such connection must not be more than three (3") inches from any end joint. On all fittings so joined and connected, the button punch connection, weld, screw, rivet, or bolt shall be at least every four (4") inches on center.

2903.3: *Flexible Connections.* Where flexible connections are desired to prevent

(Continued on Page 21, Column 1)

THE BUYER'S GUIDE

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Duct Installation Regulations of Detroit Code

(Continued from Page 20, Column 5)

vent the transmission of vibrations or for any other purpose through the duct system, flexible woven asbestos or other incombustible material or sleeve joints with incombustible packing shall be used.

2903.4: **Duct Lining.** All duct lining shall be entirely incombustible.

2903.5: **Duct Insulation.** Incombustible insulation only shall be used, except that semi-combustible insulation as defined herein may be used if protected and covered with a continuous coating of at least one-quarter (1/4") inch gypsum, portland, or asbestos cement plaster on all exposed sides and edges of the insulation not in direct contact with the duct or plenum chamber.

2903.6: **Protection of Chilled Surfaces.** When any cooling system is used, all chilled surfaces of duct system exposed to temperatures and humidities which may cause a dew deposit shall be insulated to such an extent that no condensation shall gather outside of the insulation to cause damage due to water drip either to surrounding portions of the building or structure or to the insulation itself.

2903.7: **Plenum Chambers.** Plenum chambers shall conform to all the construction requirements for ducts and may be located in any portion of a building, subject to allowable location of plenum chambers and heating and cooling apparatus in the class of building involved under other provisions of this code.

All plenum chambers are to be considered and included as a part of the duct system.

2903.8: **Access.** Plenum chambers and horizontal return ducts shall be so constructed and installed that the interior will be accessible for cleaning. Cleanout openings of suitable size shall be provided in return ducts of both new and existing air-conditioning systems at approximately twenty (20) foot intervals where the ducts are not of sufficient size to permit the entrance of a person for cleaning and inspection. Horizontal supply ducts shall conform to the same requirements for cleanout openings as return ducts unless all of the supply air passes through either a water spray or filter.

2903.9: **Exhaust Ducts for Inflammables.** Ducts for exhaust systems which discharge or conduct inflammable vapors, dust, residues, etc. shall be extended to the interior of the building in the most direct manner possible and shall not pierce floors, or extend through fire walls. Such ducts shall be independent of the structure of the building.

2903.10: **Air Filters.** All filters shall be made entirely of incombustible materials except that in buildings other than Class C or D, semi-combustible filters as defined herein may be used. All filter frames or holders shall be incombustible. All filters shall be so designed and installed as to be readily accessible for inspection and removal without danger of spilling dust or debris into any part of the duct system.

2903.11: **Oil Filters.** The use of filters involving flow or dripping of oil is prohibited. Where semi-combustible filters are permitted under this code, such filters may be cleaned with or dipped into oil having a flash point not under 350° F., Cleveland Open Cup tester, provided all excess oil is drained or removed before the filter is placed in the plenum chamber.

2903.12: **Heating Coils.** The steam pressure in the heating coils of any air-conditioning system shall be limited to 15 pounds per square inch, and shall be protected with an A.S.M.E. safety valve. Steam and hot water apparatus in air-conditioning systems shall be installed in accordance with Section 2208 of this Code.

2903.13: **Belts.** All belts used on any air-conditioning apparatus shall be of the "V" type or equivalent for restricting the generation of static electricity. The use of flat belts is prohibited.

All belts and exposed openings into blower housings shall be protected with substantial guard rails, metal screens or gratings to prevent accidents or the entry of foreign material.

Section 2904—Installation Of Duct Systems

2904.1: **Supports.** Ducts and all parts of the duct system shall be substantially supported and securely fastened to the structural elements of the building. Anchorage and brackets which support ducts shall be made of corrosion resistant metal or other durable incombustible materials. The anchorage of duct supports in masonry shall be made with expansion bolts or other suitable devices, and no

wood plugs shall be used for this purpose.

2904.2: **Location.** Ducts shall not be placed where they will be subject to damage or rupture unless properly protected against injury. Ducts shall not be so placed as to damage or diminish the required strength of walls or other structural portions of the building.

2904.3: **Fire Stopping.** The integrity of fire stopping shall not be destroyed where ducts pass through floors, ceilings, walls or partitions. The space between the duct and the portion of the building so pierced shall be fire stopped by a solid filling of a plastic incombustible material securely held in place.

2904.4: **Maintenance of Fireproofing.** Ducts shall not be built into a building in such a way as to impair the effectiveness of the fireproofing around metallic structural members, and shall not be placed between the fireproofing and the structural members protected.

2904.5: **Clearance.** Metallic duct systems shall not be placed or installed within six (6") inches of combustible construction or material including plaster on wood lath unless all such combustible construction or material with six (6") inches of the duct system is protected with a continuous layer of one-quarter (1/4") inch asbestos or equivalent incombustible material.

2904.6: **Inlets and Outlets.** Air inlet and outlet openings shall be located at least three (3") inches above floors except that in theaters protected floor inlets of the mushroom type may be used under fixed seats. When located less than seven (7') feet above the floor, inlet and outlet openings shall be protected by a substantial incombustible grille or screen through the openings of which a one-half (1/2") inch sphere will not pass, or if the openings are one-half (1/2") inch or more in either direction, they shall not be more than one-eighth (1/8") inch in the least dimension nor more than ten (10") inches in the greatest dimension.

2904.7: **Intakes.** Fresh air intake openings shall be placed at least eight (8') feet above the grade, except where located along a street or alley line such openings shall be placed at least twelve (12') feet above the grade. In all cases fresh air intake openings shall be so located as to draw air from a source which is not liable to contamination from dust, smoke, gases, soil stacks, manure boxes or garbage cans.

2904.8: **Exhaust Openings.** Exhaust openings shall be so located and protected as to not cause a nuisance, and where located on street or alley lines shall be placed at least ten (10') feet above the grade. Outlet openings for exhaust systems shall be extended to and placed on the exterior of the building.

2904.9: **Material Inside of Ducts.** Ducts, except plenum chambers, shall not contain or house anything except the lining, fire doors, fire dampers and protective devices, and shall not be used for any other purpose other than the distribution or exhausting of air. All steam, water and refrigeration coils, and the like shall be installed in plenum chambers only.

Section 2905—Enclosure of Vertical Ducts

The openings in floors of a building provided for or caused by the passage of ducts or shafts through these floors in connection with the installation of a new duct system or addition to an existing duct system shall be protected by enclosures as hereinafter specified throughout the basements or stories into which such ducts or shafts pass.

2905.1: **New Buildings.** In new buildings, the materials and methods of construction of these enclosures, where enclosures are required herein, shall conform to the requirements specified for enclosure of vertical openings established under the specifications for the type of construction required under this code for the particular building involved.

2905.2: **Existing Buildings.** In existing buildings, these enclosures, where required herein, shall be built of materials and method of construction equivalent and not inferior in fire resistive qualities to the materials and method of construction on the enclosures of the existing stairways, elevators, dumb-waiters and other vertical openings of that building, provided, that where all existing vertical openings are not enclosed with incombustible enclosures in an existing building, the enclosure of vertical openings caused by installation of a duct system shall not be required in that building.

2905.3: **Class A and C Buildings.** In Class A and C buildings, all vertical ducts passing through two or more floors, or into three or more stories, shall be enclosed as hereinbefore specified, provided, that in two story and basement or cellar buildings, such enclosure may be omitted. Where sub-basements are used all ducts entering same shall be enclosed throughout all basements or stories into which such ducts pass.

2905.4: **Class B Buildings.** In Class B buildings, all vertical ducts passing through any floor including basement floors or into two or more stories shall be enclosed as hereinbefore specified.

2905.5: **Class D Buildings.** In Class D buildings, all vertical ducts passing through basement or first floor or into sub-basement or basement shall be enclosed as specified hereinbefore.

2905.6: **Class E Buildings.** In Class E buildings exceeding two stories in height, all vertical ducts shall be enclosed as hereinbefore specified.

Section 2906—Fire Doors And Fire Dampers

2906.1: **Fire Doors Required.** An approved fire door shall be provided at each point where a fire wall or fire separation is pierced by a duct.

2906.2: **Construction of Fire Doors.** All fire doors shall be tested, approved, and labeled by the Underwriters' Laboratories, Inc. for openings in fire walls, and shall be of the standard tin clad or other approved type. All hardware and fittings on such fire doors shall be through bolted to the door. All fire doors shall be of the vertical sliding or vertically swinging type. The length of the vertical sliding fire doors shall be at least one and one-half (1 1/2) times the diameter or depth of the duct. Fire doors not in excess of 18" maximum dimension may be made of steel plate not less than 3/8" in thickness and in such cases shall not be required to be approved.

2906.3: **Installation of Fire Doors.** All fire doors shall be completely encased in a box or housing constructed of at least No. 10 U.S. gauge galvanized iron properly reinforced with steel bars and structural shapes so as to provide a rigid and tight enclosure securely attached to the duct. All joints and connections in such fire

door housings shall be made with rivets, bolts, or welds. All fire door housings, hinges, hardware, etc., shall be securely attached to the firewall by through bolts so that collapse or failure of the duct will not decrease the effectiveness of the fire door. Metallic stops or grooves shall be provided for seating and sealing of fire doors around all edges of same so as to prevent passage of fire or smoke when fire doors shall be hinged at top of duct and shall be arranged to swing in direction of normal air movement in the duct. An automatic catch shall be provided to hold vertically swinging fire doors in the closed position. All hinges and catches shall be made entirely of non-corroding materials. Hand holes with covers shall be provided adjacent to every fire door of suitable size and shape to permit inspection and adjustment of the door. Fire doors shall be held in the open position by means of approved fusible links set inside the duct which will melt at a temperature of 165° F. and allow the fire door to close.

2906.4: **Fire Dampers Required.** An approved fire damper shall be provided at the supply duct end of each plenum chamber containing an evaporator of a direct refrigeration system defined under the Official Refrigeration Code of the City of Detroit. An approved fire damper shall be provided at each point where a duct enters or leaves the enclosure of a vertical duct when such enclosures are required hereinbefore. An approved fire damper shall be provided in the main return duct of all air-conditioning systems at a point between its juncture with the fresh air intake duct and the inlet nearest to the fresh air intake duct.

2906.5: **Construction of Fire Dampers.** Fire dampers shall be constructed of No. 16 U.S. gauge metal for dampers not in excess of three

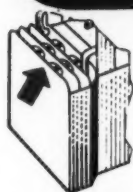
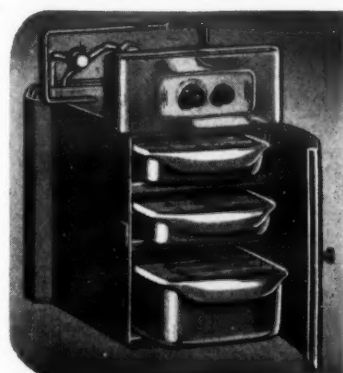
(3) square feet in area, of No. 12 U.S. gauge metal for dampers not in excess of nine (9) square feet in area, and of No. 7 U.S. gauge metal for dampers not in excess of 16 square feet in area. Fire dampers whose area is from sixteen to thirty-six square feet shall be constructed of No. 7 U.S. gauge metal reinforced on all edges and at not less than two intermediate points by 2" metal tees or angles which shall be interconnected so as to form a complete structural frame. For fire dampers in excess of 36 square feet a sectional type of damper constructed of at least No. 7 U.S. gauge material shall be used provided no section of same is over 12 square feet in area. All joints and connections in fire dampers shall be made by bolts, rivets, or welds, and no solder shall be used in the construction of any fire damper. Where the area of a duct or plenum chamber is to be protected by a fire damper is in excess of 36 sq. ft., two or more fire dampers constructed as hereinbefore specified may be used in parallel, provided metallic dividing bars of adequate strength are installed between each pair of dampers so installed.

2906.6: **Installation of Fire Dampers.** All fire dampers in horizontal ducts shall be arranged to close in the normal direction of the airflow. All fire dampers not in excess of 16 sq. ft. in area shall be hinged at one edge so as to close by gravity and in the case of such dampers in horizontal ducts the hinges shall be placed at the top edge of the damper.

Fire dampers having an area of from 16 to 36 sq. ft. shall be pivoted on a horizontal shaft. Fire dampers having an area in excess of 36 sq. ft., which are of a sectional type shall be provided with a horizontal shaft for each section or louver, and such louvers shall overlap each other by at least 1". All fire dampers shall be

(Concluded on Page 22, Column 1)

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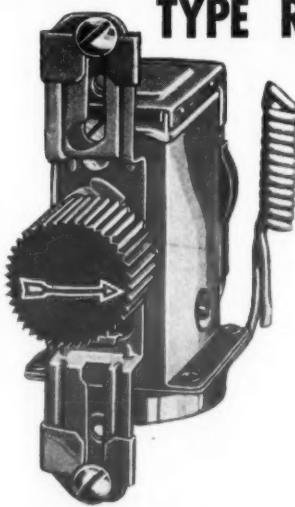
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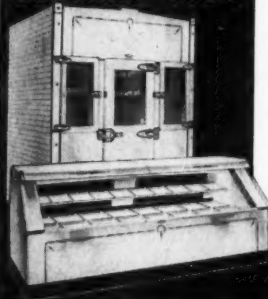
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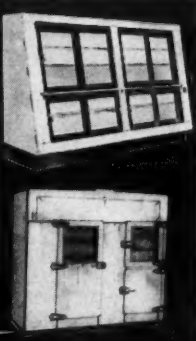
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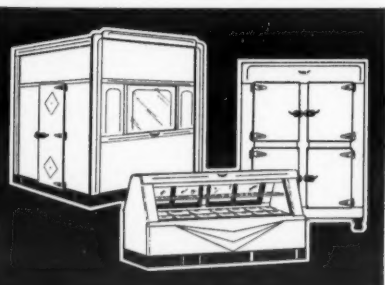
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No. 26

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Further Provisions Of Detroit Code on Air Conditioning

(Concluded from Page 21, Column 5)
installed in the duct system or in an
enclosure which is an integral part
of the duct system.

All fire damper hinges, hardware,
catches, etc. shall be securely attached
to the fire damper and to the duct by
bolts, rivets, or welds. Metallic stops
shall be provided for seating and seal-
ing all edges of fire dampers so as to
restrict the passage of fire or
smoke when the fire damper is closed,
and each such stop shall overlap the
damper by at least 1". An automatic
catch shall be provided to hold all
fire dampers in the closed position.
All hinges, shaft bearings, and catches
shall be made entirely of non-corrod-
ing materials. Hand holes with
covers shall be provided adjacent to
every fire damper of suitable size
and shape to permit inspection and
adjustment of the damper. Fire
dampers shall be held in the open
position by means of approved fusible
links placed inside the duct system
which will melt at a temperature of
165° F., and allow the fire damper
to close.

When a pivoted type of fire damper
is used, a substantial steel shaft shall
be provided rigidly attached to the
damper and supported on bearings
secured to the duct walls on both
sides. Such shafts shall be installed
on the center line of the damper and
shall extend through the duct walls
on one side at which end an arm and
weight shall be attached of sufficient
size and design to close the damper
under all conditions whenever its
fusible link shall be melted.

On the sectional type fire dampers,
a substantial metal shaft shall be
provided along the center line of each
section or louver rigidly attached to
same and supported on bearings at-
tached to the duct walls on both sides.
Each such shaft shall extend through
the duct wall on one end for attach-
ment of an arm in connecting links
so that all sections shall operate
simultaneously. A weight shall be
provided on this linkage so that all
sections will close securely and in-
stantly under all conditions upon the
melting of the fusible link provided to
hold the damper open. Where fire
dampers are required, approved fire
doors constructed and installed as
hereinbefore specified may be used.

Section 2907—Protective Devices

2907.1: *Blower Shut-Off.* Every
new and existing air-conditioning
system supplying air to two or more
floors of a building or to any floor
having an area of 3,000 square feet
or more between firewalls, shall be
provided with a blower shut-off in-
stalled at supply duct end of plenum
chamber.

2907.2: *Blower Switch.* An approved
manually operated switch shall be
provided in an accessible location, not
inside the duct system or plenum
chamber, of an air-conditioning sys-
tem, to start and stop the blower. All
blower switches shall be so designated.

2907.3: *Limit Control.* Every air-
conditioning system equipped with a
direct header shall be provided with a
limit control placed in the plenum
chamber between the direct heater
and the supply ducts.

2907.4: *Smoke Detector.* Every air-
conditioning system supplying air to
buildings of Classes C, D, E, and to
buildings of Class A as specified here-
inafter, shall be provided with an
approved smoke detector installed at
supply duct end of plenum chamber.
The Class A buildings, above referred
to, shall include all floors, other than
the first and all basements of such
buildings occupied as restaurants,
public establishments, retail stores,
recreations, business colleges, tele-
phone exchanges, markets, arcades,
dance halls, auditoriums, meeting
rooms, or private schools of Class A-2,
and having a floor area of 3,000 square
feet or more.

2907.5: *Sprinklers.* An automatic
sprinkler system shall be provided on
each side of all semi-combustible filters
with one approved sprinkler head on
each side for each 25 square feet of
filter surface so placed as to give the
greatest possible protection, provided
that sprinklers may be omitted in
such cases if an approved automatic
gas extinguishing system is installed
in the plenum chamber. Where auto-
matic sprinklers are required a source
of water supply shall be provided for
same complying with the require-
ments of Section 2303.5 for sprinkler
systems in the particular building
involved.

Section 2908—Maintenance, Use and Inspection

2908.1: *Maintenance.* All air condi-
tioning, ventilating, and exhaust sys-

tems shall be well maintained at all
times and all ducts and plenum cham-
bers shall be kept free of excessive
dust and accumulation of combustible
rubbish or debris. Plenum chambers
shall not be used for storage or occu-
pational purposes.

2908.2: *Inspection.* Plenum cham-
bers and ducts shall be inspected
periodically and accumulations of
dust, rubbish, or other debris shall be
removed so as to maintain the duct
system in a reasonably clean condi-
tion. All filters shall be kept free of
excess dust and combustible materials
and shall be cleaned or replaced
periodically so as to maintain this
condition.

2908.3: *Mechanical Devices.* All
mechanical apparatus or protective
devices, controls, fire doors, and fire
dampers shall be maintained at all
times so that they will perform the
functions for which they are required,
and shall be examined periodically to
insure such operation.

2908.4: *Torches.* Torches or open
flames shall not be used for repair
or other purposes in the proximity
of any semi-combustible filter or semi-
combustible insulation.

2908.5: *Merchandise.* Combustible
merchandise or materials shall not be
stored or placed within six inches (6")
of exposed metallic ducts or plenum
chamber.

Section 2909—Permits For Installation of Air-Conditioning Systems

2909.1: *Permits.* No new air-condi-
tioning system shall be installed or
additions or extensive alterations
made to an existing air-conditioning
system in any building, other than
Class F, unless an installation permit
has first been obtained for the con-
struction, addition, or alterations in-
volved.

2909.2: *Plans and Specifications.* All
applications for permits for installa-
tion of new air-conditioning systems
or alterations or additions to such
existing systems shall be accompanied
by two complete sets of plans and
specifications showing all details and
features necessary to show compliance
with the provisions of this code.

2909.3: *License Required for Per-
mits.* No permit shall be issued for
the installation of a new air-condition-
ing system or the alteration or addi-
tion to an existing air-conditioning
system, except to an Air-Conditioning
Contractor licensed as such under the
provisions of this Code. Provided
that the owner of a building may
secure such permits for installation,
alteration, or addition of air-condi-
tioning systems in his building with-
out being licensed as an Air-Condition-
ing Contractor, if all such work is
done by such owner or by his em-
ployees or servants under his direct
supervision. For the purpose of this
section, the owner of a building shall
be defined as any person, firm, part-
nership, or corporation holding title
and possession of the building by
virtue of a deed, land contract, or
lease for a period of three years or
more.

Section 2910— Air-Conditioning Contractor's License

2910.1: *License Required.* No per-
son, firm, partnership, or corporation
shall engage in the business of in-
stalling or altering air-conditioning
systems as defined in Section 2902.1 or
mechanical warm air heating systems
as defined in Section 2207.6 without a
license from the Department of
Buildings and Safety Engineering in
the name of the Mayor authorizing
the holder thereof to carry on or
engage in such business.

2910.2: *Requirements for License.*
The Department of Buildings and

Safety Engineering is hereby em-
powered to issue a license in the name
of the Mayor to install or alter air-
conditioning systems and mechanical
warm air heating systems to any
reputable person who is a citizen of
the United States or to any reputable
firm, partnership, or corporation upon
the payment of a license fee of
Twenty five (\$25.00) Dollars and the
execution and delivery of a penal bond
of Five Thousand (\$5,000.00) Dollars,
with such surety or sureties as are
approved by the Corporation Counsel,
conditioned upon the faithful observ-
ance and performance of the provi-
sions of all laws and ordinances ap-
plicable to the business conducted and
work done by the licensee. No such
license shall be issued until the
applicant therefor shall have shown
satisfactory evidence that he has the
necessary knowledge and experience
to properly conduct the business and
do the work authorized by such
license in accordance with all ap-
plicable laws and ordinances. Every
license issued under the provisions
of this section shall expire December
31st of the year in which it is issued.

Section 2911—Identification

Every air-conditioning system or
mechanical warm air heating system
hereinafter installed or altered by a
licensed air-conditioning contractor
shall be provided with an identifica-
tion, as hereinafter specified, in a
conspicuous and accessible location.
Such identification shall show the
name and address of the Air-Condition-
ing Contractor in permanent and
legible form.

Section 3—Repeal of Previous Ordinances

All previous ordinances or portions
of ordinances inconsistent with or
conflicting with the provisions of this
Ordinance and all amendments there-
to are hereby repealed only to the
extent necessary to give this Ordinance
full force and effect.

Section 4—Validity

Should any section, paragraph, or
provision of this ordinance be de-
clared invalid by any Court of com-
petent jurisdiction, such action shall
not affect the validity of this ordi-
nance as a whole or any part thereof
other than the part so declared invalid.



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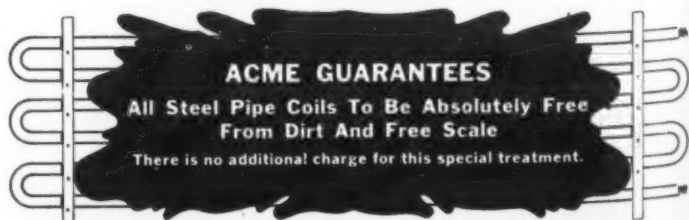


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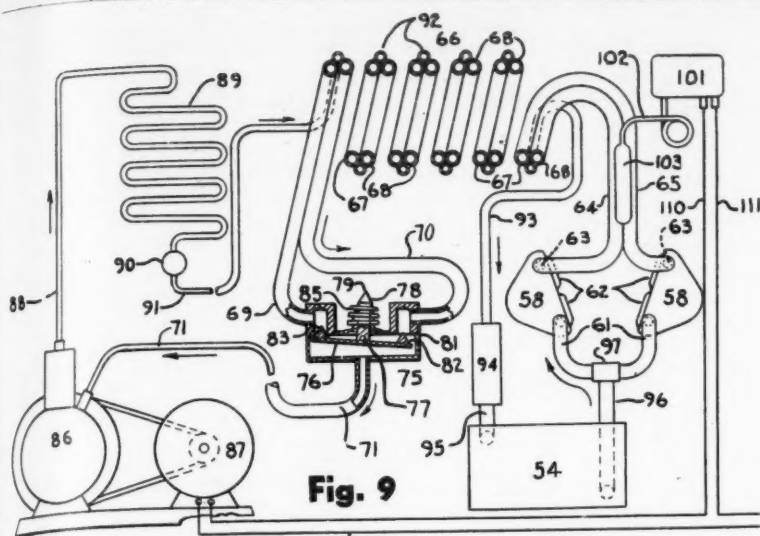


Fig. 9

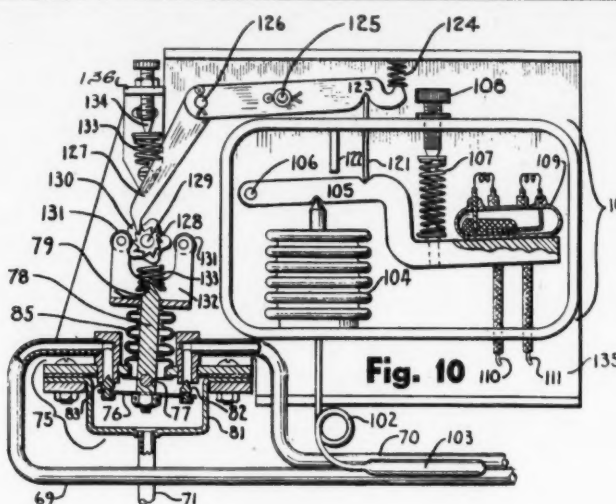


Fig. 10

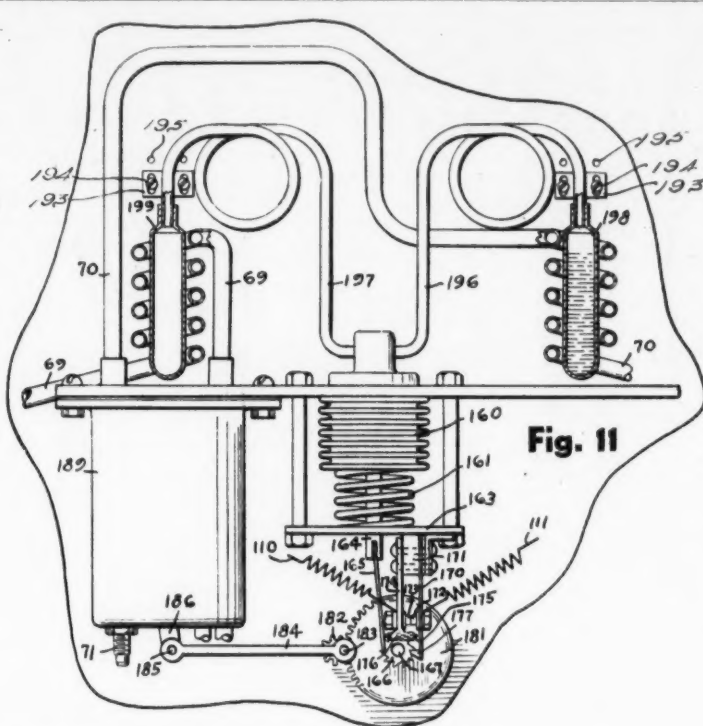


Fig. 11

Muffy's Model Makes Ice Wafers

(Concluded from Page 17, Column 5)

The thermostat (101) has its bulb (103) clamped against the tubes (64) and (65), each of which forms the outlet for one side or one evaporator of the ice maker. The condensing unit is thereby stopped in response to a frost-back tendency in either of these two tubes, such frost-back being the indication that a batch of ice has been completed by that side of the ice maker. The same bulb responds to a general rise of cabinet air temperature to start the unit, at which time the valve rocker (76) is caused to snap to its other position to make the other half of the ice maker become the active side.

Each half of the ice maker is thus allowed a length of time for freeing equal to the freezing period of the reverse side plus two idle periods. The freeing of the ice may be further aided by placing fins (58) on the ice-maker evaporator units.

The method of tying the thermostat control to the rocker valve which selects the evaporator to be active at the next run is seen in Fig. 10. Expansion of the bellows (104) due to the warming up of bulb (103) during an idle period causes the switch shown as mercury bulb (109) to close and start the condensing unit. At the same time the expanding bellows is pushing upward on rod (121) causing the pawl (127) to actuate the ratchet wheel (128) and turn the star wheel or cam (130) to the left one-tenth of a turn, thus making the required shift in position of valve rocker (76). This is a snap action, due to the toggle spring (133).

Among the several valve mechanisms shown for producing cyclic action of the ice-maker valve and thermostat is the one seen in Fig. 11. This view shows the switch parts, while the valve and a heat exchanger are enclosed in the housing (189).

An interesting feature is the use of two bulbs attached to one bellows and so arranged that the bellows action is responsive to the temperature of the colder one of the two bulbs, where the liquid portion of the control charge will condense. In other views not reproduced here this principle is applied to a control bellows having three bulbs connected with it. The individual adjustment of position of the two bulbs shown in Fig. 10 provides a means for balancing the action of the two

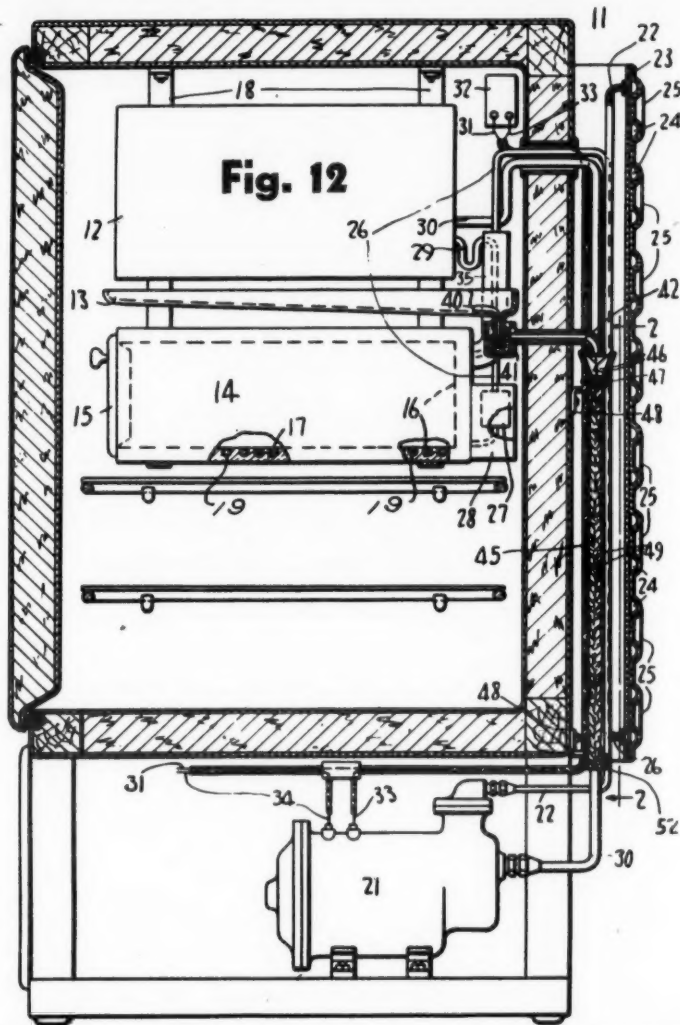


Fig. 12

evaporators or favoring one of them.

Fig. 12 is a sectional view of a cabinet showing the method used for disposing of drip water so that the user need never empty a drip pan; yet there is no drain. The upper evaporator or ice-maker assembly (12) does most of the cooling of the cabinet and collects some dew. The lower sharp freezer (14) is insulated so as not to collect frost or dew; hence it is only necessary to have the shallow drip-collecting pan (13) located to catch drip from the unit (12). As rapidly as this drip water collects it drains through the tube (42) to a drip evaporator located on the back of the cabinet between the cabinet wall and the sheet metal condenser.

On account of the fact that only a few drops of water are collected at a time, this drip evaporator will function without being near or connected with the condenser, which may be located in the unit compartment instead of on the back of the cabinet.

Fig. 13 shows an arrangement of a sheet metal evaporator on the rear of the cabinet, having the condenser itself formed to provide troughs for collecting and evaporating the drip water.

Fig. 14 is a photograph of one of Mr. Muffy's models used in the survey of user reactions. While this model is later in design than many of the patent drawings shown, it is over three years old and further changes have been made since that time.

Fig. 15 is a side view of the low side assembly of Fig. 14. In this model the tank wall is smooth and its contacts with the evaporator elements are flat, forming ice discs, bars, or wafers that are flat on one side and curved on the other. The drawer seen partly pulled out is in the freezer, where a temperature constantly below 10° F. is maintained by means of a 2° F. eutectic freezing mixture as covered by a number of Mr. Muffy's older patents.

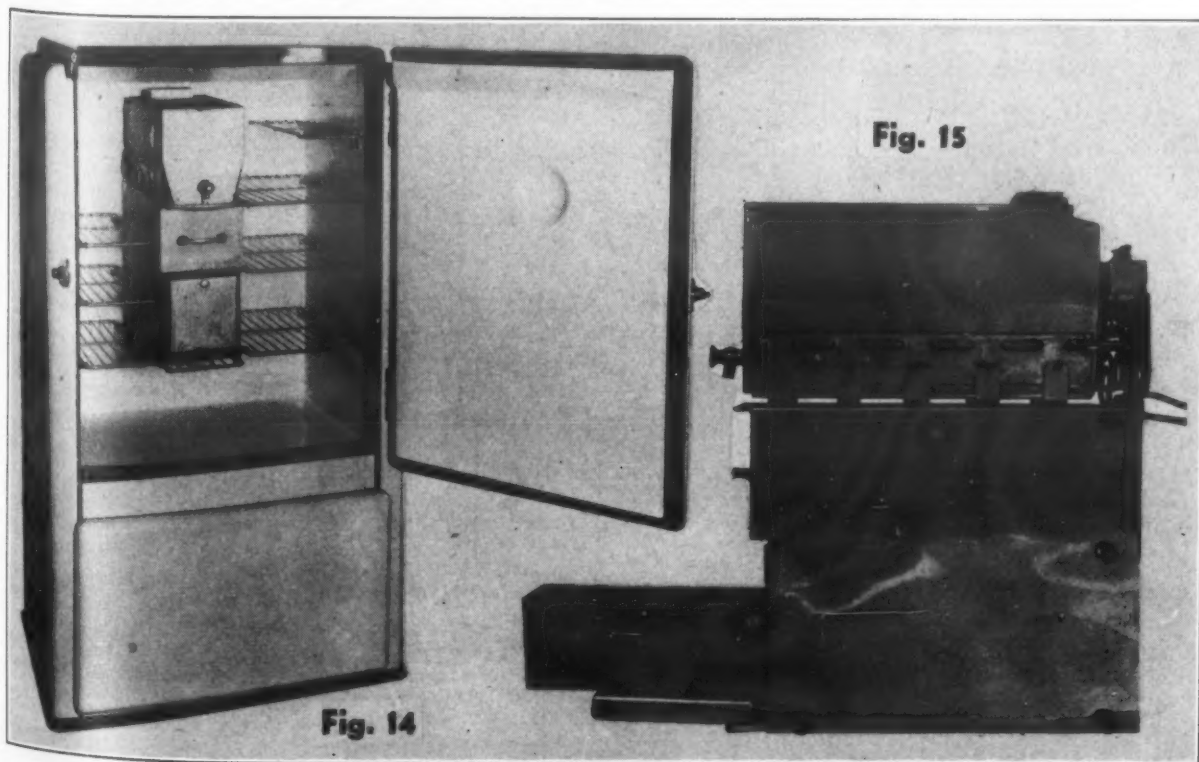


Fig. 15

Fig. 14

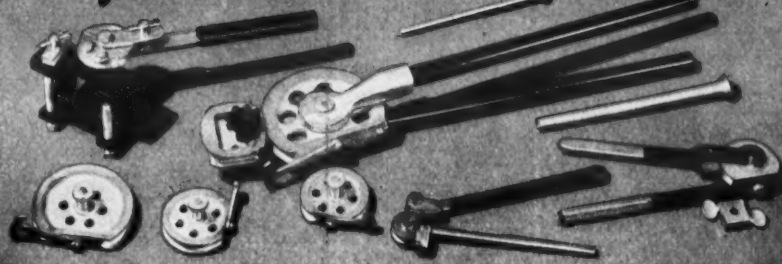
Raleigh Dealer Goes After Electric Kitchen Sales

RALEIGH, N. C.—William K. Bernhard of Bernhard's Hotpoint dealership here recently sold another complete electric kitchen, including Monel metal cabinets throughout (to conform with the range surface) and a complete line of small appliances.

Buzz Reid Joins Sterchi Bros. Furniture Co.

ASHEVILLE, N. C.—Buzz Reid, formerly connected with Reusings', Inc., Frigidaire dealer here, is now on the sales force of the local branch of Sterchi Bros. Furniture Co., which also handles several electrical appliance lines.

Imperial Tube Benders



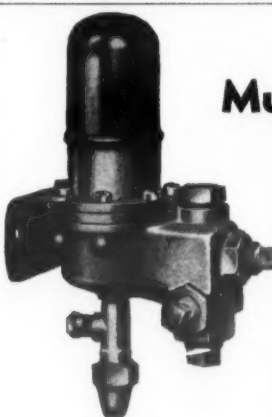
Many a good looking refrigeration job has been spoiled because of poorly shaped tubing but with Imperial tube benders there is absolutely no excuse for turning out a poor tube bending job. Imperial tube benders are so inexpensive

that every service man should have at least two types in his kit. You can get exactly what you need whether your work calls for spring type benders, heavy duty types or a bender that will also make coils.

Ask your jobber about Imperial tube benders or write for catalog.

THE IMPERIAL BRASS MFG. CO., 565 S. Racine Avenue, Chicago, Illinois

IMPERIAL Air Conditioning and Refrigeration Products
VALVES • FITTINGS • TOOLS • CHARGING LINES • FLOATS • STRAINERS • DEHYDRATORS



AMINCO Multiple-Temperature Snap-Action Valve "A Precision Instrument"

For systems with more than one coil, operated from one compressor unit, controlling differing temperature on various coils. May be used with any refrigerant except ammonia. For flooded as well as dry gas types or any combination of either.

American Injector Company
1481 Fourteenth Avenue Detroit, Michigan
Pacific Coast—Van D. Clothier, 1015 E. 16th, Los Angeles

Nameplates in Perpetual Motion



Constantly working for more sales. Without obligation let our artists create for you an embossed nameplate that will go far beyond merely identifying your product. Today—write for details that will make your plate part of your sales force.

American Emblem Co., Inc.
Earle Blvd., Utica, N. Y.

Sales Offices: New York, Chicago, Philadelphia, Dayton, Detroit, St. Louis, Los Angeles. Representatives in all major cities.

1914—Our Silver Anniversary—1939

CLASSIFIED ADVERTISING

RATES: Fifty words or less in 6-point light-face type only, one insertion, \$2.00, additional words four cents each. Three consecutive insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning & Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

WANTED: MANAGER who is capable of operating business of selling, erecting and servicing the highest grade refrigeration, air conditioning, refrigerated cases, stokers, home insulation and lines known in the United States, who will take a small financial interest in the business. The above is a golden opportunity for a capable, energetic, honorable person. Address B.A.W., Box 215, Saginaw, Michigan.

POSITIONS WANTED

GRADUATE MECHANICAL Engineer with thirteen years in refrigeration and automotive development and product engineering. For past six years head of engineering laboratory for large household refrigerator manufacturer. Desires position with manufacturer, manufacturer's representative, or large distributor in sales or engineering department. Box 1118, Air Conditioning & Refrigeration News.

REPRESENTATIVES AVAILABLE

I AM anxious to represent some reliable manufacturer as a factory representative. I am an engineer with 14 years of experience in this field. This time has been spent with two outstanding manufacturers of refrigeration and oil burning. I am thoroughly familiar with the New England and Middle Atlantic territories. May I submit you my qualifications? Box 1120, Air Conditioning & Refrigeration News.

BUSINESS OPPORTUNITIES

BUSINESS FOR SALE: Thriving, established business with excellent earning record located in prosperous non-industrial mid-western city with 27,000 inhabitants. Top lines of air conditioning, commercial and household refrigeration and radio. Also radio and refrigeration service and amplifiers. \$5,000 cash required, balance payable from earnings. Other pressing interests of owner necessitate sale. Box 1119, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

HAVE FOR immediate cash sale approximately 200 electric refrigerators, Frigidaires, Kelvinators, and Merchant and Evans, complete, \$10.00 each, as is. ASSOCIATED REFRIGERATOR PLANT, INC., 3028 W. Hunting Park Ave., Philadelphia, Pa.

DEALERS AND SERVICEMEN—Offering Kelvinators, General Electric, Westinghouse, Frigidaires, as is, as low as \$8.00 each, guaranteed fully equipped. Frigidaire compressor units, all sizes guaranteed in perfect condition. We have brand new boxes, all makes, at below dealers' prices. Write for prices! LANDOR WAREHOUSE, INC., 53 East 10th Street, New York City.

REPAIR SERVICE

GENERAL ELECTRIC and Westinghouse hermetic units rebuilt. Guaranteed unconditionally for one year. Entire unit. Chipt evaporators reconditioned to look new. Modern shop testing methods employed. General Electric DR1, DR2, Westinghouse, \$30; DR3, \$35. Prices larger units upon request. GENERAL ELECTRICAL REFRIGERATOR SERVICE OF BROOKLYN, 1672 Coney Island Ave., Brooklyn, N. Y.

DOMESTIC CONTROLS repaired: Ranco pencil \$1.75, Ranco box \$2.00, General Electric \$2.00, Tag \$2.00, Cutler-Hammer \$2.00, Penn \$2.00, Bishop Babcock, \$2.50, Majestic \$2.50, Penn magnetic \$2.50, G. E. Frigidaire \$2.50. In business over 20 years. Our name is our guarantee. UNITED SPEEDOMETER REPAIR CO., INC., 342 West 70th Street, New York City.

GENERAL ELECTRIC and Westinghouse hermetic unit replacement and rebuilding service. One year unconditional guarantee. All units are completely rebuilt on a modern production line, tested through every step of rebuilding with complete test equipment, subjected to exhaustive operation tests for wattage, efficiency, quietness and then Duco finished. General Electric DR1, DR2, and Westinghouse, \$30.00. Quotations furnished on other models. Quick service—guaranteed work. REFRIGERATION MAINTENANCE CORPORATION, 321-27 East Grand Avenue, Chicago.

CONTROL REPAIR service. Your controls repaired by expert mechanics, with special precision equipment. Supervised by graduate engineers. We stress perfection and dependability before price. One year guarantee on domestic controls. Any bellows operated device repaired. HALELECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Air Conditioning

G-E Air Conditioning Department Executives Carry Story To Field

(Concluded from Page 1, Column 3) than ever before on new construction, modernization, and the various phases of housing. No one can deny the need for the industry's product, but the paramount need is for more merchants to sell that product, and to shape the existing distribution channels to fit the market.

"We are determined to go out and ring our own doorbells, all over the country, to the end that every salesman and engineer engaged in selling heating and air conditioning will have the importance of 1939 business brought home to him at first hand."

'DOORBELL' RINGERS

Seven officials of the G-E air-conditioning department make up the "doorbell-ringing" crew, the party including in addition to Mr. Donovan, Elliott Harrington, manager of commercial engineering and cooling sales; A. E. Pierce, manager of oil furnace sales; H. C. Williams, manager of gas furnace sales; S. Martin, Jr., manager of the product division; B. F. Slye, dealer and distributor operations; and Glenn Gundell, advertising and sales promotion manager.

Details of sales campaigns for all lines of equipment, and advertising and promotion plans will be discussed fully at each regional session. Two days will be spent in each city visited, the first devoted to a general meeting for distributors, dealers, and the members of their organizations, and the second a closed session for distributors only.

The opening gun of the tour was fired Feb. 2 and 3 at Dallas, Tex., since the cooling season in the southwest begins somewhat earlier there than elsewhere in the country. The trip will conclude March 13-14 in San Francisco. Complete schedule follows:

SCHEDULE OF TRIPS

Feb. 2-3, Dallas, including distributors also from Oklahoma City, Tulsa, New Orleans, Little Rock, Houston, Shreveport, El Paso, San Antonio, and Austin.

Feb. 6-7, Atlanta, including distributors from Jacksonville, Miami, Savannah, Augusta, Birmingham, Nashville, Columbia, Knoxville, Memphis, and St. Petersburg.

Feb. 8-9, Raleigh, with distributors also from Norfolk, Richmond, and Roanoke.

Feb. 10-11, Philadelphia, with distributors from Baltimore, Washington, Wilmington, Harrisburg, Reading, Atlantic City, Bethlehem, Williamsport, and Scranton.

Feb. 13-14, New York, with distributors from Newark, Brooklyn, Stamford, New Haven, Bridgeport, Kingston, and Poughkeepsie.

Feb. 15-16, Boston, with distributors from Bangor, Manchester, New Bedford, Providence, Worcester, Hartford, and Springfield.

Feb. 17-18, Albany, with distributors from Pittsfield, Utica, Schenectady, Binghamton, Syracuse, and Rochester.

Feb. 20-21, Cleveland, with distributors from Erie, Buffalo, Bradford, Wheeling, Pittsburgh, Akron, Youngstown, and Toledo.

Feb. 22-23, Cincinnati, with distributors from Columbus, Charleston, Lexington, and Richmond.

Feb. 24-25, Detroit, with distributors from Flint, Grand Rapids, Jackson, Ann Arbor, and Saginaw.

Feb. 27-28, Chicago, with distributors from Fort Wayne, South Bend, Indianapolis, Matton, St. Louis, Davenport, Cedar Rapids, Ottumwa, Madison, Milwaukee, Oshkosh, Des Moines, and Louisville.

March 1-2, Kansas City, with distributors from Omaha, Lincoln, North Platte, Grand Island, Wichita, Denver, Joplin, and Springfield.

March 3-4, Minneapolis, with distributors from Fargo and Duluth.

March 8-9, Seattle, with distributors from Spokane, Boise, Portland, and Walla Walla.

March 13-14, San Francisco, with distributors from Los Angeles, Las Vegas, Phoenix, Salt Lake City, Oakland, Reno, Sacramento, and Fresno.

19-Yr. Dollar Volume

(Concluded from Page 1, Column 1) figures are adjusted to include the relatively small sales of manufacturers outside of the association.

It should also be noted that the following totals cover the installed cost of air-conditioning equipment which takes into account the considerable cost of field installation work and materials. Therefore, these figures should not be confused with statistics based on manufacturers' sales to distributors and dealers.

The total for 1938 is not yet available, but will probably be at least 25% below 1937.

1919	.....\$	700,000
1920	.....	1,000,000
1921	.....	1,300,000
1922	.....	1,700,000
1923	.....	2,000,000
1924	.....	2,800,000
1925	.....	3,800,000
1926	.....	5,000,000
1927	.....	7,500,000
1928	.....	10,000,000
1929	.....	13,000,000
1930	.....	17,000,000
1931	.....	12,000,000
1932	.....	8,000,000
1933	.....	10,000,000
1934	.....	14,000,000
1935	.....	35,000,000
1936	.....	53,000,000
1937	.....	81,500,000

Many World's Fair Bldgs. Are Air Conditioned

(Concluded from Page 1, Column 2) by individual exhibitors or groups of associated exhibitors, in which air conditioning will be installed, includes American Radiator, American Telephone & Telegraph, American Tobacco, Beech-Nut, Borden; the Belgian, British, Canadian, French, Italian, Rumanian, Soviet Union, and other foreign pavilions; Christian Science, Consolidated Edison, Continental Baking, Distilled Spirits, du Pont, Eastman, Ford, Gas Industry, General Motors, General Cigar, General Electric, Johns-Manville, Standard Brands, Swift, U. S. Steel, and Westinghouse.

The Building Code provides that all spaces in all buildings should be adequately ventilated, and establishes minimum requirements for ventilation. These requirements are enforced for all Fair constructed buildings; and plans for privately constructed buildings are carefully checked for compliance with this requirement.

In the public spaces of Fair constructed buildings the minimum code requirements of 2 cubic feet of air per minute per square foot of floor have been increased by 50% in some buildings, and by 100% in other buildings to insure adequate removal of the heat from electric lights and the heat produced by people.

In general, buildings are ventilated by attic fans. Warm air is discharged from the buildings to the outdoors so that fresh, cooler air is compelled to replace the warm air that is exhausted. Fans are ar-

ranged so that all or as many as are needed to suit the size of the attendance in each building may be operated, thus giving flexibility to meet operating conditions.

Kitchens are ventilated on the basis of a minimum of 3 cubic feet of air per minute per square foot of floor to insure healthful conditions for the kitchen staffs and to prevent the odor of cooking from entering dining spaces to the annoyance of the public.

Toilets are ventilated at the rate of 35 cubic feet of air per minute per fixture.

The Perisphere and the Theater and Concert Hall are air conditioned for summer use. Air in the Perisphere will be cooled, dehumidified, ionized, and circulated through the spaces occupied by the public.

In all buildings in the Fair equipment will be installed totaling more than 4,000 tons of refrigerating capacity. This is equivalent to melting 4,000 tons of ice each 24 hours, at the rate of 1,200 cakes of ice per hour, each cake weighing 300 lbs.

Due to their use prior to the opening of the Fair, the Permanent Utility building, the Permanent Field House, the Permanent Boat House, three fire houses, the employment office, and several minor store houses and shops are provided with heating systems for winter use.

To further comfortable conditions in the exhibit buildings by keeping the heat of the sun from passing through the walls and roofs, the walls are insulated with reflective insulation on the inside of the wall coverings, and the roofs are insulated with 1-inch fiber-board insulation and painted with reflective paint to throw off the heat of the sun.



THE STANDARD

Far reaching vision adds to the handiwork of an organization; a priceless ingredient.

People recognize this priceless thing in the products of that organization, and a standard is established.

That standard is a dependable product designed to accomplish more than its purpose and used by everyone because it carries the trademark of that organization.

AUTOMATIC PRODUCTS COMPANY
2450 NORTH THIRTY-SECOND STREET
MILWAUKEE WISCONSIN

Export Department, 100 Varick Street, New York City

DEPENDABLE

THE BYWORD FOR A-P VALVES